

AMERICAN ARTISAN

MAY
1943



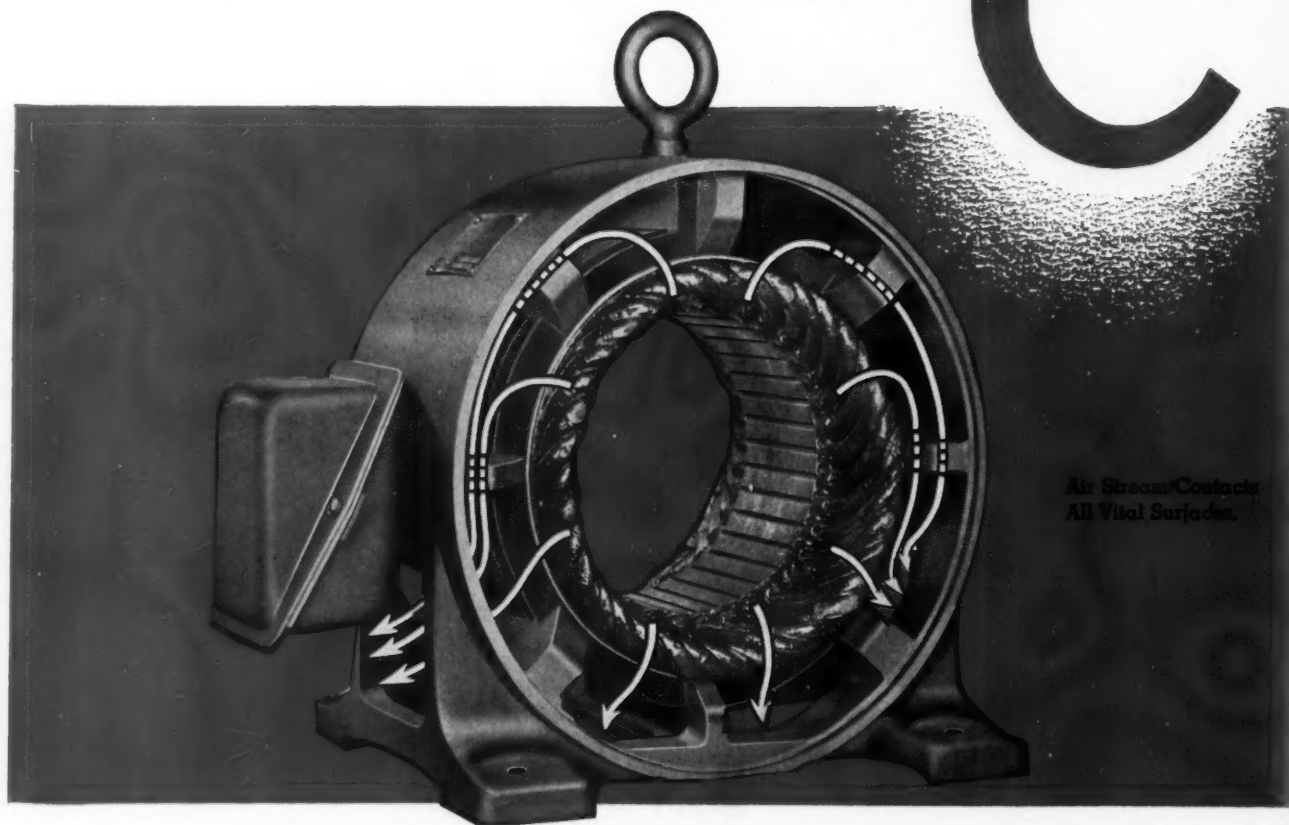
RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING • SHEET METAL CONTRACTING

ESTABLISHED
1 8 8 0

CENTURY FORM J

Ventilation System

Keeps the Motor Clean!



The Century method of motor ventilation not only protects the insulation by sending a blast of cooling air through spacious air passages to all vital motor parts, but also keeps the air passages clean. This is due to Century's ventilation design in which the cooling air is:

- 1 Drawn in around the bearing housing by two fans and the rotor bars.
- 2 Directed against the end of the rotor near the shaft.
- 3 Blown out across the copper conductor bar ends by the fans on the rotor.
- 4 Blown around the stator coil ends.
- 5 Deflected inside the frame across the outside of the stator laminations.

- 6 Forced out from the lower half of the frame at the side and bottom of the motor.

Century air passages are large and smooth—not easily clogged—and suspended matter is carried through the passages and blown out by the force of the cooling air blast.

Proper cooling and ventilating is only one of the many design and engineering advantages of Century Motors. For complete information as to the proper Century Motor to meet your requirements, call in your nearest Century Application and Service Engineer today.

Form J Motors Are Now Available in 2 to 15 hp

CENTURY ELECTRIC COMPANY

1806 Pine Street, St. Louis, Missouri

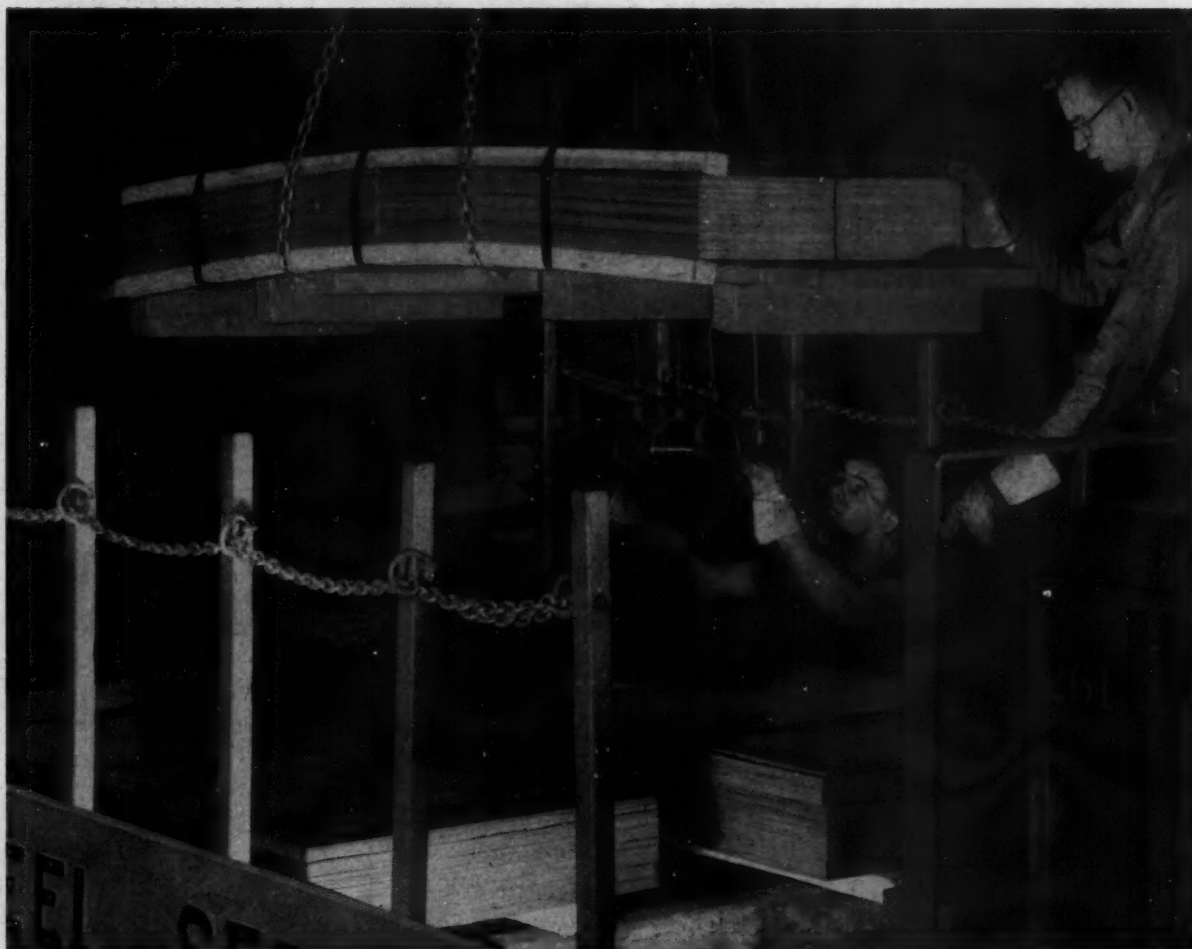
Offices and Stock Points in Principal Cities.

310



1/6 to 600 horsepower.

One of the Largest **EXCLUSIVE** Motor and Generator Manufacturers in the World.



HOT ROLLED SHEETS . . . Quick Ryerson Delivery!

Welcome news for sheet metal fabricators—Ryerson has ample stocks of standard size hot rolled sheets on hand to meet your immediate needs. Ryerson, as you know, also carries thousands of different kinds, shapes and sizes of steel products in stock—all subject to the WPB program.

Unusually heavy demands sometimes deplete our supply of special types or certain sizes—but when ordering, you'll want to call Ryerson *first*—for new stocks arrive daily.

Let Ryerson engineers and metallurgists work with you on any problems of procurement or fabrication. Our experience in helping thousands of customers may save you time, trouble and money. These days when every piece of steel is needed for victory—Ryerson will help you make the most of all available steel.

Principal Products

Alloy Steel
Babbitt—Solder
Bars—Bar Shapes
Boiler Fittings
Floor Plate
Rails—Plates
Reinforcing—Wire
Rivets—Bolts—Nuts
Shafting—Piling
Sheets—Strip
Stainless Steels
Structurals
Threaded Rods
Tubing—Drill Rod
Welding Rod
Metal-Working Machy.

Joseph T. Ryerson & Son, Inc.,
Chicago, Milwaukee, St. Louis,
Detroit, Cleveland, Cincinnati,
Buffalo, Boston, Philadelphia,
Jersey City.

RYERSON STEEL—SERVICE

AMERICAN ARTISAN

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

WITH WHICH ARE MERGED

FURNACES
SHEET METALS

AND

Warm-Air
Heating

J. D. Wilder, Editor

A. A. Kennedy, Assistant Editor

Vol. 112, No. 5

May, 1943

Founded 1880

CONTENTS

Furnaces in the Post War Period.....	23
Twelve Guide Posts to Survival.....	24
Interpretations, Amendments to Existing Orders.....	26
The National Warm Air Ass'n History (Part 2).....	28
Kruckman—Furnaces Under the CMP.....	30
On Our Industry's Front.....	32
Nat'l Warm Air Heating & Air Conditioning Ass'n Page	34
Association Activities	65
New Products	68
New Literature	74
With the Manufacturers.....	81
War News Section.....	94

THE RESIDENTIAL AIR CONDITIONING SECTION

War Worker Dormitory Heating System.....	37
Next Winter's Fuel Oil Rationing Program.....	43
Neubecker—Angular Boot, Rectangle to Round.....	44
Simplified—But Better—Gravity Systems (Part 4).....	46

THE SHEET METAL SECTION

Outboard Motor Spare Parts Boxes.....	51
Temporary Dies and Fixtures for a Marine Tank.....	54
Radiant Energy (Infra Red) Drying.....	59
Where's the Rivets?.....	62

In This Issue

FURNACES!

This issue is full of discussions about them!

In the editorial (page 23) we present some preliminary thoughts which the industry hopes will be crystallized into an industry-wide action program at the National Warm Air Association summer meeting in Chicago (Drake Hotel) on May 26.

In the Association "Says" page (page 34) Managing Director George Boeddener tells what furnace manufacturers think will be the market; what types of furnaces we will provide; how many will be needed; and some other pertinent data.

On page 30 Arnold Kruckman tells us what has become of the long lost furnace order (L-22); what men and agencies are trying to make up their minds on what to do about furnaces; why a new L-22 is more or less meaningless in view of the control over raw materials by Controlled Materials Plan; and, lastly, how furnaces and other needs of our industry are presently lost in a great political scuffle over how much material the essential civilian economy is entitled to.



For those contractors who are casting envious eyes at the potentially large dormitory program using large furnaces and extensive duct systems, we suggest a study of our report (page 37) on one firm's experience with such a project. The contract is not as rosy, perhaps, on close examination, as it is over someone else's fence.



In this issue Ernest Zideck takes a change in pace in his series on fabricating war products and presents the first of what we hope will be many articles on how to make and use temporary dies and fixtures to make your war products rejection-proof.

We point out that if you can visualize and build temporary dies and fixtures you have won half the battle on inspection-proof production.

Member of Audit Bureau of Circulations—Member Associated Business Papers, Inc.

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Ducts com
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give low
heat loss.

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AMERICAN

SAL-MO SUPPLY DUCT



Showing a partially completed duct. Metal was used only for Hangers, and Fittings.



A typical Installation of Sal-Mo Supply Duct in a Defense Housing Project.

SAL-MO Supply Duct is the non-metallic material for constructing supply and return ducts for Warm Air Heating, Ventilating and Air Conditioning systems. Its use permits many installations that would otherwise be impossible because of the Government rulings restricting the use of metals.

Sal-Mo Supply Duct is pre-fabricated and packaged at the factory. It is quickly installed, saving not only hours in erecting time, but also assures important savings in shipping, trucking and storing.

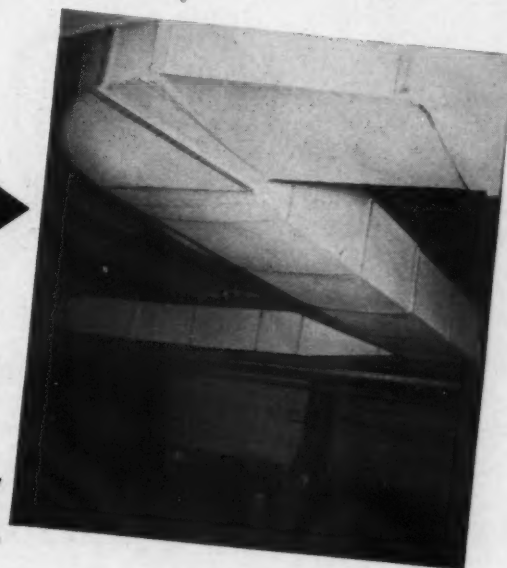
Ducts constructed of Sal-Mo Supply Duct are tight, quiet, insulated and fuel saving. The low conductivity rate of this material assures efficient operation in Duct systems for both heating and cooling. Smooth interior surfaces give low friction loss. Air tight construction prevents heat loss.

PROMPT DELIVERY. Sal-Mo Supply Duct is made in 26 Standard sizes, 4' lengths for all domestic and industrial requirements.

Complete Duct systems can be made from Sal-Mo Supply Duct Sheets. This means not only straight runs, but elbows, take-offs, transitions, joints and connectors as well can be successfully made without metal. Ducts may be fabricated in the shop or on the job.

Approved and Listed by UNDERWRITERS' LABORATORIES, INC.

Sal-Mo Supply Duct is tested for Fire Hazard Classification; Fire Spread; Inflammability, and Moisture Absorption. It has a "K" Factor of 0.294 B.T.U.



SALL MOUNTAIN COMPANY
176 West Adams Street, Phone Andover 2414, Chicago, Ill.

Now's the time for G-E Dealers to get busy!

Now the heating season is over, you have your chance to cash in on the G-E advertising which is urging home owners to have furnaces cleaned, inspected and adjusted *this summer*.

The advertisement reproduced here is the third in the series. It will appear in *Better Homes & Gardens* for July and in *American Home* for August. Like the May and June ads in both of these magazines, it tells home owners to call in the local *G-E Dealer*.

This offers you an opportunity to get added service business in the slack months—to avoid some of the fall rush—to cultivate good prospects for new G-E heating equipment after the war.

There are plenty of people in your territory who *need* the expert service G-E Dealers can supply. Go after them *now*—and good luck! *General Electric Co., Heating Division 3535, Bloomfield, New Jersey.*

GENERAL  ELECTRIC



"A rest this summer won't fix ME up for next winter! Talk about torpid liver—my whole *system* needs overhauling. Get me fixed up now, and then we can *both* rest easy."

* * *

DON'T wait until the fall rush is on! Avoid service headaches by arranging for *summer* inspection and adjustment of your heating plant. No matter what furnace or fuel you're using, call your G-E Heating Dealer, today!

Ask also for our booklet, "Tips on Fuel Conservation." It's free—tells how to keep warm and save fuel. Address *General Electric Co., Heating Division 3147, Bloomfield, New Jersey.*

GENERAL  ELECTRIC

LOG

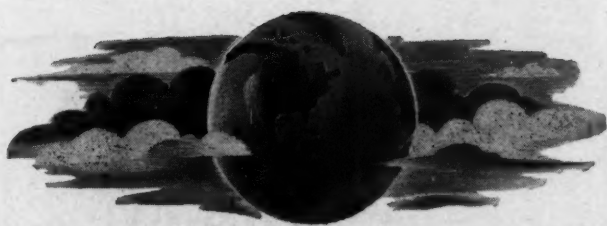
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● SALES OFF

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SALES
ATLANTA
BALTIMORE
BIRMINGHAM
BOSTON
CINCINNATI
CLEVELAND
DALLAS
DENVER

AMERICAN



LOGISTICS is the word for the exact military science of supply and delivery. Upon the speed and facility with which this branch of the service can function depends the eventual outcome of the war. On the factory front, too, adequate supply and delivery of raw materials are just as vital.

And that is where Federated Metals steps in. With its geographically strategic plants and distributional centers adjacent to or an integral part of every important manufacturing center, Federated is equipped and keyed to fill wartime's demands for non-ferrous metals of dependable quality.

Today, Federated's traditional skill, research and manufacturing facilities are devoted — 24 hours around the clock — to the production of more and more perfect ingots for the needs of industry. Tomorrow, these better metals will be available to help you meet the post-war battle of competition. *For information, contact your nearest Federated Sales Office.*

Logistics

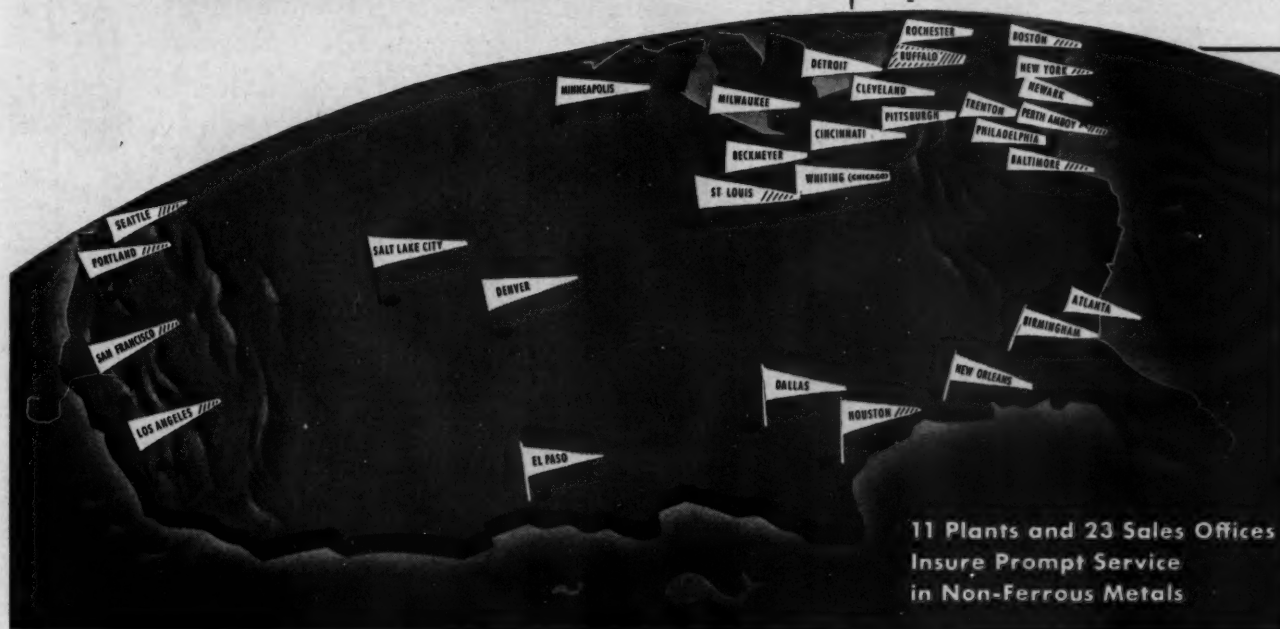
is another word for

SERVICE!

PRODUCTS PRODUCED BY FEDERATED METALS

ALUMINUM	SOLDER
BRASS	BABBITT
BRONZE	TYPE METAL
ZINC	LEAD

All of these in all commercial forms — Special Alloys to your specifications.



11 Plants and 23 Sales Offices
Insure Prompt Service
in Non-Ferrous Metals

● SALES OFFICE ★ PLANT // LEAD PRODUCTS FACILITIES

FEDERATED METALS DIVISION

AMERICAN SMELTING AND REFINING COMPANY

SALES OFFICES
ATLANTA, GA.
BALTIMORE, MD.
BIRMINGHAM, ALA.
BOSTON, MASS.
CINCINNATI, OHIO
CLEVELAND, OHIO
DALLAS, TEXAS
DENVER, COLO.

DETROIT, MICH.
LOS ANGELES, CAL.
MILWAUKEE, WIS.
MINNEAPOLIS, MINN.
NEW ORLEANS, LA.
NEW YORK CITY
PHILADELPHIA, PA.
PITTSBURGH, PA.
PORTLAND, ORE.

ROCHESTER, N. Y.
SALT LAKE CITY, UTAH
ST. LOUIS, MO.
SAN FRANCISCO, CAL.
SEATTLE, WASH.
WHITING, IND. (Chicago)
PLANTS
BECKMEYER, ILL.
DETROIT, MICH.

HOUSTON, TEXAS
LOS ANGELES, CAL.
NEWARK, N. J.
PERTH AMBOY, N. J.
PITTSBURGH, PA.
SAN FRANCISCO, CAL.
ST. LOUIS, MO.
TRENTON, N. J.
WHITING, IND.



**WHEN THE
WAR IS
OVER**

**AIR CONTROL
REGISTERS AND GRILLES**
*Will Be As Modern As
The Times*



Air Control's engineering facilities are concentrated solidly on materials for Victory. When Victory is won, Air Control's facilities will be returned to the job of turning out new products, new applications, and new designs engineered by Air Control.

Many new developments, temporarily held up by the war, will be put into manufacture and Air Control will again assume leadership in new developments.

Air Control—yesterday—today—and after Victory—the outstanding name in Register and Grille Engineering.

Recent amendments to Limitation Order M-126 now make it possible to resume production of Air Control Registers for orders carrying preference ratings. Ample stocks at our plant, also at our jobbers, make it possible for Air Control to give you prompt delivery on your defense register requirements.

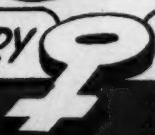


Air Control Products, Inc.

COOPERSVILLE • MICHIGAN

COPPER

AT WAR!

VICTORY  METAL



SHOTS 1 TON
A MINUTE!
30 caliber machine about 1
ton of copper in every
single minute of operation.

500 TONS EVERY
MONTH!
Radio, telegraphic and
telephonic equipment
require 500 tons of copper
every month.



1 TON IN EVERY FLYING
FORTRESS!
Every flying fortress engine
and all that require a ton
of copper.

50 TONS IN EVERY
REAR ENGINE!
Every medium tank
has 50 tons
of copper.



HUSSEY COPPER

CONTRIBUTES **FIGHTING** SPEED,
INCREASED MOBILITY AND MORE
ACCURATE FIREPOWER TO OUR
ARMED FORCES

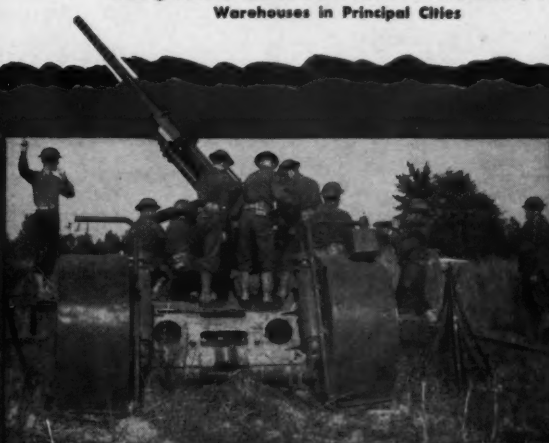
Copper, America's metal of action! On all battlefronts—indispensable at a thousand points of application. Resists corrosion, reduces friction—an ideal vehicle to transmit electrical energy. A true Victory Metal, Hussey Copper provides constant uniformity, easy workability and proved dependability, so essential to our war program today!

HUSSEY

C. G. HUSSEY AND COMPANY

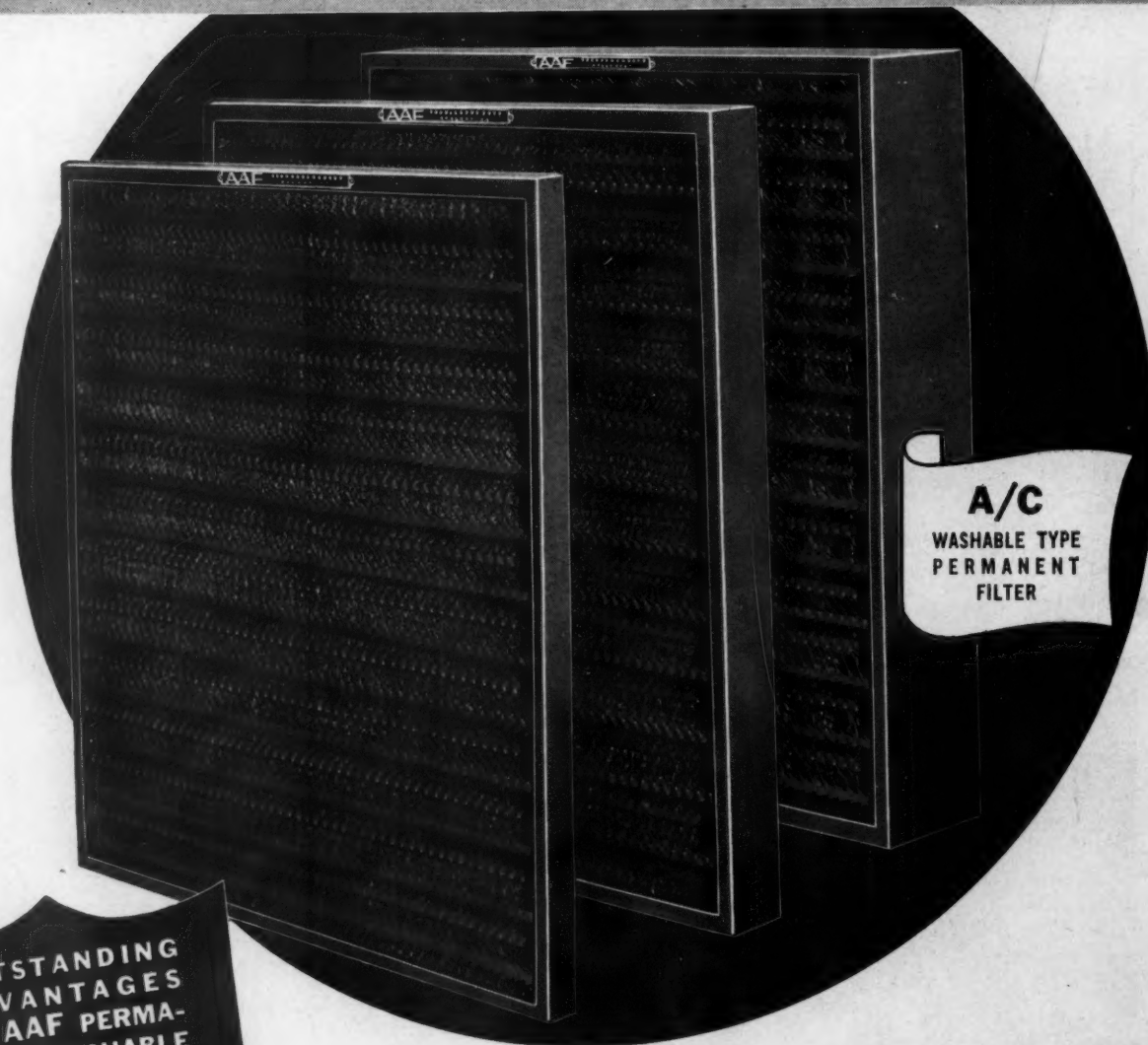
(Division of Copper Range Co.)

Rolling Mills and General Offices: PITTSBURGH, PA.
Warehouses in Principal Cities



SHOTS ONE TON IN EVERY MINUTE!
A 37-mm. anti-aircraft gun shoots a ton of copper every
30 minutes of operation.

MORE ECONOMICAL & DEPENDABLE FOR HEATING & VENTILATING SERVICE



OUTSTANDING ADVANTAGES OF AAF PERMA- NENT WASHABLE FILTERS

Interchangeable frames and cells to simplify installation.

Progressive packed medium to increase the dust-holding capacity and reduce frequency of maintenance.

Rugged construction and outstanding performance characteristics to meet all requirements of heavy-duty service.

Standardized servicing equipment; steam cleaning tanks for washing of cells on large installations; complete line of Viscosine for re-coating to meet various air cleaning requirements.

A wide variety of types and sizes to meet all air cleaning requirements.

Heating, cooling and ventilating equipment is working overtime thruout the nation to take care of ever-increasing war production activities and use of public buildings.

The switch to permanent type filters for these purposes is the natural result of the need for greater economy and overall higher efficiency. Thousands of American A/C unit filters have been furnished to Army Corps for use in barracks, recreation rooms, class rooms, theatres—in fact, all buildings where large numbers of men congregate.

Engineering data and installation details will be sent on request. Write for your copy.



AMERICAN AIR FILTER COMPANY, INC., 355 CENTRAL AVE, LOUISVILLE, KY.

INCORPORATED
IN CANADA, DARLING BROTHERS, LIMITED, MONTREAL, P. Q.



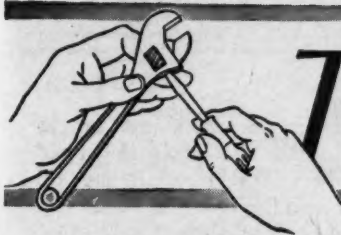
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TOOL NOTES

"How To Do It"
Information For
Crescent Tool Users

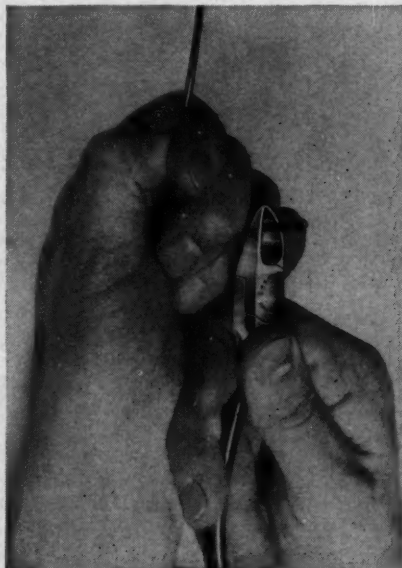
No. 10 HOW TO USE LIGHT PLIERS FOR TELEPHONE, RADIO AND SIGNAL WORK

● There is a definite technique employed by experienced mechanics, in working with light insulated wire, that is both time-saving and workmanlike. The operations of cutting, "skinning" and "cleaning" occur very frequently in practically all work of this general type. In the procedure described below, Crescent's Light Diagonal Plier No. 942 performs these operations equally well with both solid and stranded conductor wire.



Here is the proper way to grasp a light diagonal plier. The little finger "inside" the handles provides a counter pressure to hold the jaws apart. Pressure of the thumb stabilizes the tool and helps maintain de-

sired jaw opening. Some mechanics include the third finger with the little finger "inside" the handles, using index and second finger for "outside" pressure.



To "skin" wire, grasp it as shown with the left hand. Now with plier held as above described, close the jaws sufficiently to cut thru the insulation *only*. Don't cut thru the conductor! Counter pressure of "inside" fingers and steadying action of thumb pressure provide excellent control over depth of cut. Now, with both hands as illustrated, "rock" plier handles toward left wrist and the resultant prying action will strip the insulation from the wire end.

MAIL THE COUPON

for free reprints of this series of 10 informative ads. Indicate whether wanted for bulletin board use or punched for 3-ring binder.



"Cleaning" or brightening of the bare wire is accomplished as illustrated here. Close jaws just enough to provide slight pressure and draw cutter blades along the bare wire a few times. Rotate wire with fingers and thumb of the left hand so that the entire circumference is cleaned.



When making connections with light wire in inaccessible places, Crescent's Long Nose Pliers No. 1033 or 654 are very useful. Grasp end of wire with plier tip, and with left hand holding wire as shown, wrap the bare end around terminal screw.

CRESCENT TOOLS
Give Wings to Work

CRESCENT TOOL COMPANY, JAMESTOWN, N. Y.

Crescent Tool Co., Jamestown, N. Y. A-1

Please send your "TOOL NOTES" Series
☐ for Bulletins ☐ for 3-ring binder

Name _____

Address _____

City _____ State _____

Cutting-Scoring-Rolling A.R.A. SHEETS

EASY TO WORK



A.R.A. SHEETS are the accepted alternate for sheet steel in the Heating and Ventilating Field. These preferred and workable sheets are designed and constructed to lend themselves to easy fabrication. You can cut these strong sheets easily to any pattern with a pair of snips, giving a clean, smooth, precise and definite edge.

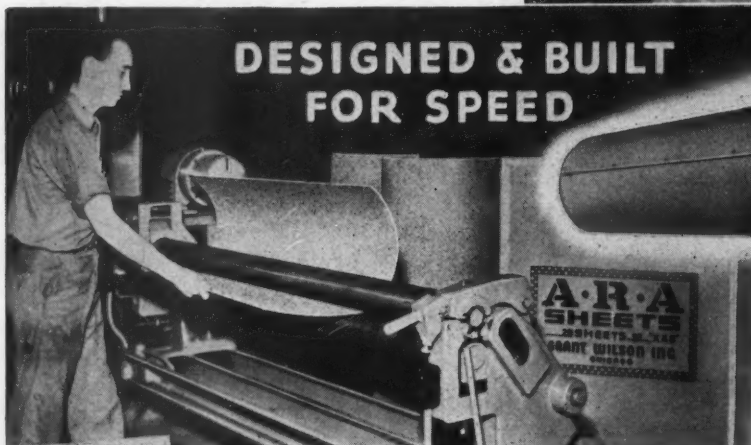
A.R.A. SHEETS can be quickly notched, die-cut and fabricated into intricate and complicated fittings in your own shop. "Sheetlock" or other preformed metal corners and fastening seams can be used to make up very strong and durable A.R.A. fittings. A.R.A. Sheets are the most WORKABLE sheets on the market today.

Here is a simple way to Score A.R.A. Sheets in your brake to any desired angle. Mark the A.R.A. Sheet where you want to score. Set your brake to allow for the thickness of the sheet plus $\frac{1}{4}$ " or $\frac{3}{8}$ " for a metal rod which should be a little longer than the sheet. When the sheet is in the brake, place the rod exactly on the line to be scored, and then pull the top leaf bar of the brake several times. The rod creases and flattens the A.R.A. Sheet, forming the perfect score on which the sheet can be bent to any desired angle. With a little practice you will get most satisfactory results.

EASY TO SCORE FOR BENDING



DESIGNED & BUILT FOR SPEED



You can roll up A.R.A. Sheets satisfactorily and quickly on your own rollers into strong smooth round pipe. All you have to do is feed the sheets thru the same as you would a sheet of steel.

You can roll the back of fittings to make bends or you can roll round pipe. Standard metal (sheetlock No. 2 seams) can be used, or you can rivet, screw or staple longitudinal lap-joints in your shop or on the job. You can roll a piece of A.R.A. Sheet or a narrow strip of scrap metal to form either sleeve or collar for the butt joints. Try A.R.A. Sheets and be convinced.



Write today for the free 16-page illustrated booklet No. 89-A, which describes the many outstanding features that are possible only in A.R.A. Sheets. Get genuine A.R.A. Sheets from your jobber.

Asbestos clad A.R.A. Sheets are tough yet flexible—rigid but not brittle—fire-proofed and water-proofed—will not dry out, crack, crumble, or chip, have a high insulating value (K. 45 B.T.U.) and good sound-deadening properties. Here is the package of A-R-A Sheets that make it the most convenient sheet to ship, stock or carry on the job. The Sheets are always clean and in good condition.

CARTON CONTENTS

20 Sheets 33" x 48" Per Carton
40 Sheets 16½" x 48" Per Carton

SHIPPING WEIGHT

Approximately
100 lbs. per Carton

SHEET THICKNESS

Approximately
3/16" thick




4101 WEST
TAYLOR ST.

GRANT WILSON, INC.

CHICAGO
ILLINOIS

TODAY, PLANES ARE WINGING DESTRUCTION TO OUR ENEMIES



 Roaring across land and sea, wave after wave of deadly bombers drives to the nerve centers of our enemies, with vast destruction.

★ Each of these great fighting machines must take off and land, and here Randall Bearings give assurance of smooth faultless bearing performance.

★ Randall Bearings are in daily dependable work on all war production equipment as well as actual fighting machines. Whatever your needs may be for reliable bearings, on war production now . . . on peacetime production later . . . let our engineers help you. Write now for catalogs 42 and GB43, without obligation.

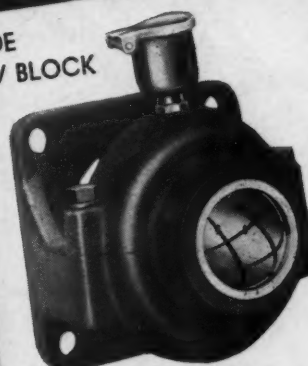
Representatives Carrying Stocks

C. W. Marwedel Salt Lake Hardware Co.
San Francisco, Cal. Salt Lake City, Utah

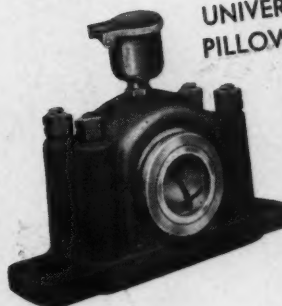
Tek Bearing Co.
177 Lafayette, New York City
1192 Commonwealth Ave., Boston, Mass.

RANDALL GRAPHITE PRODUCTS CORPORATION
DEPT. 511 609 W. LAKE ST. CHICAGO, ILL.

FLANGE OR SIDE
MOUNT PILLOW BLOCK



UNIVERSAL
PILLOW BLOCK



ONE-PIECE STEEL
PILLOW BLOCK HOUSING



Randall

Springboard for Airpower



Just strips of steel 18 inches wide by 10 feet long, punched full of holes and made so that when you lay them down side by side, they lock together.

But assemble some thousands of these strips and you have a potent weapon—a military runway. Runways made in this way are serving as springboards from which Flying Fortresses, Grumman Wildcats and A-20-A's are being launched against the Japanese north of Guadalcanal, and against the Nazis in North Africa.

Bethlehem's main job in the

landing mat program is supplying a tremendous tonnage of sheet steel to many fabricators for processing into these mats. Monthly production has been growing fast, and has already reached a figure that might mean something to an enemy advertiser, so we can't quote. But when you realize that just one military runway eats up 3,000,000 pounds of sheet steel, you get an idea of the magnitude of the program. Supplying steel for landing mats is only one of the many ways in which Bethlehem is working to aid our armed forces.

Due to the great need for landing mats in a hurry, Bethlehem Steel Company has converted a portion of its building specialty department to the production of these mats for the duration of the emergency.



PENN BOILER and BURNER MFG. CORPORATION

MANUFACTURERS OF

"PENN" OIL AND GAS FIRED HEATING EQUIPMENT

OIL BURNERS

OIL FURNACES

WATER HEATER UNITS

AIR CONDITIONER UNITS

PHONE 3-3889

FRUITVILLE ROAD
LANCASTER, PA.

May 1, 1943.

Mr. Heating Expert,
Everywhere, U. S. A.

Howdy, Boy:-

So you haven't heard of Penn Boiler lately! Maybe you've forgotten us, or maybe you remember the good old days when we used to drop around and see you every so often.

Well—just in case you have been wondering—we're doing all right, thank you! Just because you haven't seen any new Penn Boilers around lately doesn't mean that we're not still in there slugging.

Along with the rest of American Industry we're devoting all our time these days to winning the war; night and day the implements of Mars are rolling off our production lines to help slap down the enemy.

But while our factory is working on the job for today, our laboratory is working on the job for tomorrow. Comes V-day, YOU CAN EXPECT GREAT THINGS FROM PENN BOILER! One of these days—we'll be seeing you.

Very truly yours,

PENN BOILER & BURNER MFG. CORP.

Per

President

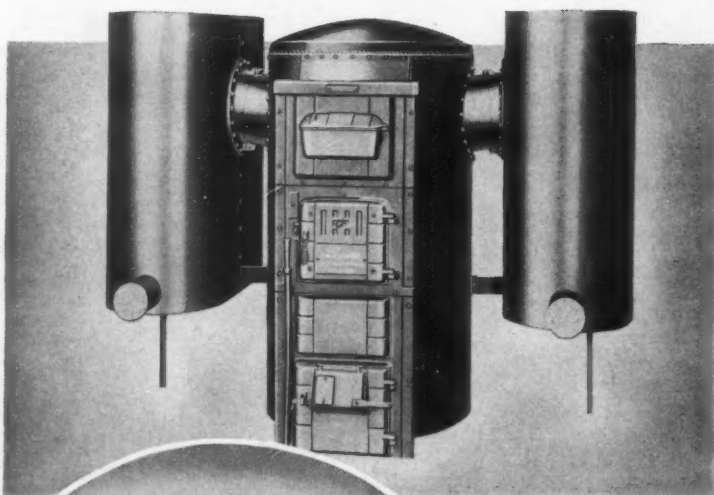


PENN BOILER & BURNER MFG. CORP.

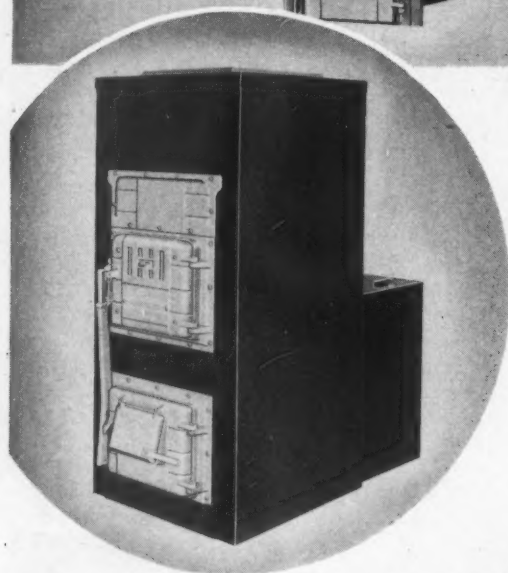
E. C. STAUFFER, PRESIDENT

LANCASTER, PENNA.

A PAIR OF *Victory 8's*



No. F-638-DA
Coal Burning Hand
Fired Furnace



No. 718-SA
Coal Burning Hand
Fired Forced Air
Furnace

HERE they are, a remarkable pair of Victory 8 heating units ranging from 18" to 38", just a pair of Luxaire's contributions to the war effort.

The Series No. 638-DA, a tremendous large 38" furnace of heavy-gauge steel construction, designed to meet government specifications for the efficient heating of barracks and other large buildings at army camps and air bases.

The Series No. 718-SA a small, compact 18" furnace, of steel construction, also designed to meet government specifications for houses of three or more rooms in war housing projects.

This pair of Victory 8 heating units was designed and developed by Luxaire to supply the war demands when the standard line of Luxaire heating and air-conditioning equipment did not conform to the new government war-time specifications.

BUY MORE WAR BONDS AND STAMPS

Luxaire

WARM AIR FURNACES . . . AIR CONDITIONING UNITS . . . COAL . . . GAS . . . OIL
THE C. A. OLSEN MANUFACTURING CO., ELYRIA, OHIO

**Bet
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THE SU

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**CONTINENTAL
SUPERIOR
STEEL**



GET IN THE SCRAP
 One ton of your idle scrap makes two tons of fighting steel. Search your plant again and again—every pound of scrap is important.

Better Steel for War Today... Better Steel for You Tomorrow!

Even before war came, hands trained to the making of steel for peace had turned to the making of steel for war. Because war has made new demands of Superior steel . . . new requirements in specifications, new applications . . . Superior is building a reserve of metallurgical information, production experience and technical improvements. These resources will be at your command when the war is over. Superior will be better equipped than ever to meet your needs in steel sheets. Call on Superior now to work with you on your plans for after the war. We invite your inquiries.

THE SUPERIOR SHEET STEEL COMPANY
 CANTON, OHIO

(Subsidiary of the Continental Steel Corp., Kokomo, Indiana)




Superior's well-known trademarks stand for specific qualities in galvanized sheets. Superior GALVANIZED is soft-tempered and carries a uniform zinc coating applied by the Superior Process. Superior CHECKER COAT has a distinctive spangle pattern for smart appearance. In all, there are some thirty different kinds of Superior sheets.



SUPERIOR

CONTINENTAL STEEL CORPORATION



THE WISE HOME OWNER WILL HAVE HIS FURNACE WORK STARTED EARLY THIS YEAR

Because of the rationing programs which have been put into effect during the past year, we Americans can no longer buy whatever we want. As an example, many home owners have experienced the pinch of fuel and material shortages during the past winter and, consequently, are receptive to the idea of placing their orders now for needed furnace repairs or replacements.

Although the heating season has just come to a close, it is time to be thinking of this year's furnace work. The reason for this is that while cast furnaces are available now for necessary replacement work, there is no way of knowing how long this will be so.

In the interest of everyone concerned, may we suggest that you advise your customers to have their heating plants inspected now? By doing so you will get an early start on your furnace work—will be giving yourself ample time to obtain the materials you need—and you will be doing your customers a service they will appreciate.

A DEPENDABLE
SOURCE OF SUPPLY
FOR 84 YEARS

THE J. M. & L. A.
OSBORN Co
CLEVELAND, OHIO
BUFFALO • CINCINNATI • DETROIT
Distributors of Metals and Metal Products

DEALERS SAY: —



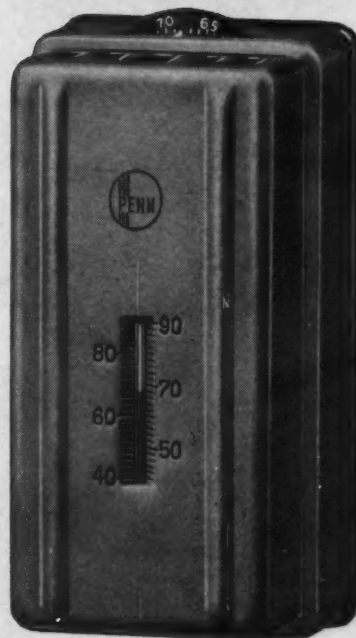
**PENN CONTROLS
MEAN
GOOD WILL TODAY —
INCREASED SALES
TOMORROW**

More than ever before, good will is the foundation of good business.

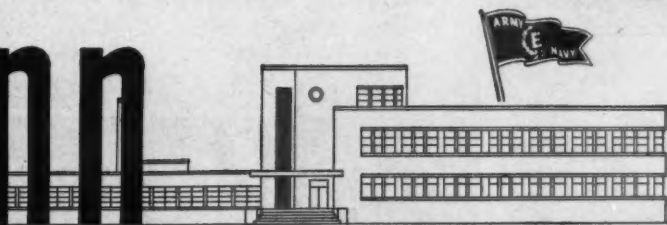
Under the stress and restrictions of war times, good will is harder to maintain—but automatic heating dealers who foresee the tremendous opportunities in the post-war world are doing everything possible to keep customers sold.

Penn automatic heating controls are doing their part in this important job. They are serving *dependably*, at a time when dependability is appreciated above all other qualities... keeping users sold... creating wider acceptance for the automatic heating which will be available when Victory is won.

Penn Temtrol, the heat anticipating thermostat, leads the Penn line of automatic controls for all fuels and all systems... a *complete line* which will meet every sales opportunity in the post-war market. Temtrol holds temperature closely to selected level, avoids zig-zag heating, and helps conserve fuel to make the allotted ration go further. *Penn Electric Switch Co., Goshen, Ind.*
In Canada: Powerlite Devices, Inc., Toronto, Ont.



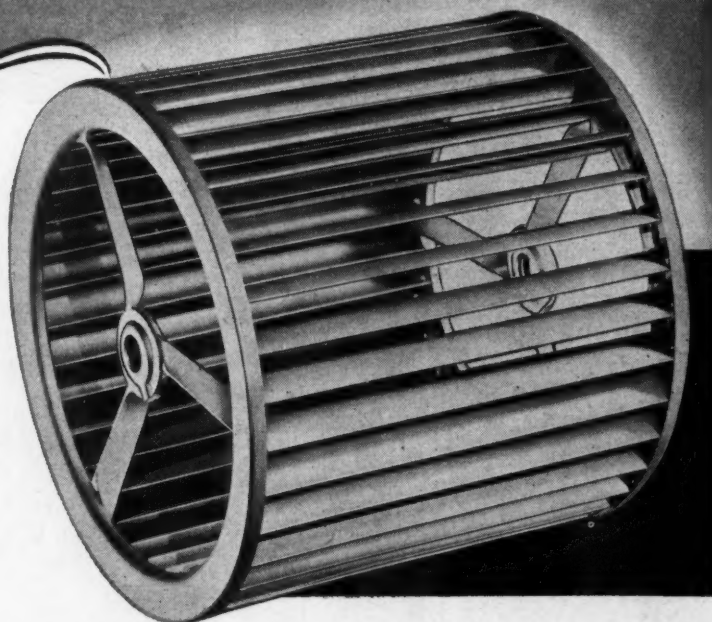
PENN



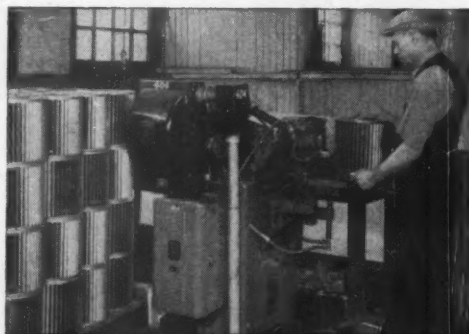
AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

Less Steel
★
Less Labor
★
Lower Cost



with **MORRISON** *Airstream*
BLOWER WHEELS



AUTOMATIC SPOT WELDER



AUTOMATIC DIE EQUIPMENT

HOW YOU SAVE

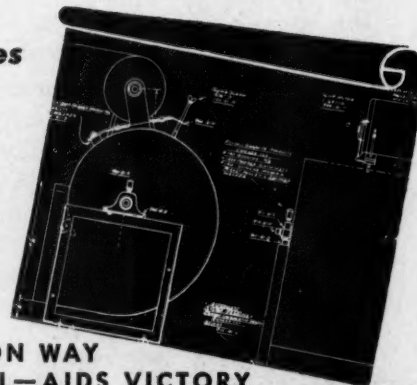
You save through cost reductions made possible by a design that requires less steel as well as through simplified and automatic methods which reduce man hours. The resulting economies mean greater profits and increased competitive advantages to you.

Modern production methods with their requirements of speed and conservation of metal have taught industry to streamline and simplify many manufacturing processes. An outstanding example is the MORRISON *Airstream* Blower Wheel whose patented construction saves metal and man hours—yet produces a sturdier, more rigid and better balanced wheel.

Four major die-formed parts are spot welded together on automatic welding equipment. The blades are die-formed as a unit from one continuous sheet of steel, eliminating chance of loose blades, reducing vibration to a minimum and insuring life-long quiet operation.

**Build Your Own
Blower Assemblies**

You can save money by building blower assemblies in your own shop. We'll furnish the *Airstream* Blower Wheels and proper scroll design to meet your requirements, together with complete detail working drawing. If desired, one of our engineers will call.



**THE MODERN MORRISON WAY
CONSERVES VITAL STEEL—AIDS VICTORY**

MORRISON PRODUCTS, INC.

EAST 168TH & WATERLOO ROAD
CLEVELAND, OHIO



We call it the "VICTORY" department

WITH ALL THE ROAR AND HUSTLE

of big-time war production, there is one little corner of the Fitzgibbons plant where veteran boiler-making experience has its eyes focused on "V-year." In this secluded corner, new and better Fitzgibbons steel boilers and air conditioners are being planned. These new boilers and air conditioners will be riding right on top of the surging wave of building which will come roaring into being when Victory opens the sluice-gates to the dammed-up flood of orders.

BUY U. S. WAR BONDS
and STAMPS



Thus while much of the present effort of Fitzgibbons is to spread among our enemies discomfort, inconvenience and downright catastrophe, Fitzgibbons is set to distribute comfort, convenience and health at the call of "Cease Firing"!

Fitzgibbons Boiler Company, Inc.

101 PARK AVENUE • NEW YORK, N. Y.

WORKS: OSWEGO, N. Y.

OFFICES IN PRINCIPAL CITIES

FITZGIBBONS

Steel Boilers and Air Conditioners for the homes of tomorrow



HERE'S THE FINEST

"Incentive Plan"

WE KNOW

Nobody has to remind Frank Maricle, press operator at the Buffalo plant of The American Brass Company, about the importance of all-out production for U. S. war needs. He has the best of all reminders and "incentive plans" in his son, Ben . . . U. S. Army Air Corps Sergeant.

And so it is with thousands of other American Brass workers who have sons and brothers, cousins and nephews, in the armed forces. They know they are producing not merely metals but copper and brass war materials for *them* . . . to help bring victory sooner. To date, over 3,500 former American Brass fellow workers, themselves, are serving

in the armed forces of Uncle Sam.

The American Brass Company operates thirteen plants in U. S. and Canada which are working night and day on the same vital job . . . turning out the greatest volume of copper and brass in the company's history . . . every pound of it earmarked for victory. The five Army-Navy "E" pennants we've received are a challenge to still greater effort.

United America will win

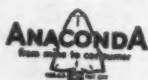
As a nation and as individuals, the American people are united in fighting this war—on the battle front and on the home front . . . buying War Bonds . . . conserving rationed materials . . .

• Technical Sergeant Ben Maricle, U. S. Army Air Corps, at home on leave, congratulates his father, Frank Maricle, American Brass press operator, on the production job he is doing.

making personal sacrifices . . . doing their part wherever they are.

For instance, sheet metal workers, despite lack of their standby metal, copper, are doing a valuable job of helping maintain comfort and security on the homefront. Through inspection, ingenious repairs, advice and maintenance, they are preventing many a small trouble developing into a large one . . . thus serving home owners well during this wartime emergency. 4341

THE AMERICAN BRASS COMPANY
General Offices: Waterbury, Connecticut
Subsidiary of Anaconda Copper Mining Company
In Canada: Anaconda American Brass Ltd.,
New Toronto, Ont.



Anaconda Copper & Brass

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Furnaces In The Post-war Period

INDIVIDUALLY and by industries, American business is "getting set" to satiate the public's requirements for essential and luxury goods in the post-war period.

Bell-wethered by the Federal Department of Commerce, Committee for Economic Development and the Chamber of Commerce of the U. S., and spread through regional and local planning groups, the thinking today is largely in terms of how to maintain a 100 billion dollar national income and at least 50 million persons earning an income.

This means a larger national income and more persons working than the nation ever recorded in peace times. The goal requires that industry be prepared to supply goods the public wants and needs; available in every market, no matter how remote; and to be sold at prices commensurate with the income level.

Under this stimulus, hundreds of companies have launched peacetime planning programs, embracing the study of means of providing full employment, developing new products, new methods, better distribution. Whole industries, likewise, have set up committees to study the needs and possibilities for the sale of the industry's products after the war.

This peace-time planning has become the main theme of the advertising of many companies. "The First Thing I Want After the War"; "What Will Tomorrow's . . . Be Like"; "Your Home of Tomorrow"; "Plan Now for Better Living in Your Post War Home"—are only a few of the dozens of themes which crash out of national magazines.

The hope, of course, and the probabilities, also, are that this focusing of public attention to post war will start families—and individuals—to arrange in order the things they want first after the war. The scramble will be to get the public's dollar before the other fellow gets it.

Our warm air heating industry is also thinking in terms of after the war. On our National Warm Air Heating and Air Conditioning Association "Says" page in this issue George Boeddener summarizes some of the thinking and planning which has already been done. This is only the groundwork. A comprehensive program will be pre-

sented at the association's coming June convention.

Our problem is clearly defined. We must capitalize on the home owner's present consciousness of the importance of better heating to convince hundreds of thousands of owners that a first "must" is a modern heating plant. We must convince owners of houses already built that a better heating system is available. We must convince families who plan to build homes that the heating system is, in truth, the very essence of better living and that the home they plan or intend to buy must have this better heating.

The details of the program are not so simply stated—nor so easily satisfied. The producers of post war heating equipment must be prepared to offer apparatus which meets every possible shift in types of houses we will build; apparatus which, in truth, offers "air conditioning" as the public defines the term; apparatus which will burn any fuel desired.

The installer must be prepared to recommend the particular type of apparatus which best meets the buyer's needs and he must be able to install the system so that the buyer is completely satisfied and completely comfortable. It would seem that the industry should be prepared to guarantee its apparatus and its installation so that the owner can buy with the conviction that he will get a satisfactory system.

We have, as an industry, already progressed far along this road to customer satisfaction. We do have apparatus which meets every possible buyer demand. We can, and we do, install this apparatus so that the buyer is comfortable. We should make certain that in the post war period no architect will ignore, no builder will abuse, no installer will skimp the requirements which make or break the performance of the service we offer.

Lastly, we must educate the buyer to expect results directly in keeping with the amount of money he is willing to spend for comfort.

This program is far reaching. It goes beyond our accomplishments to date. It necessitates planning of a wide vision variety. It requires a unity of purpose and a willingness to place the industry ahead of individual selfishness. It requires money. Other industries are doing it—will do it. Will we?

12 Guide Posts To Survival

By Arthur Roberts

IT SEEMS likely that 1943 will be a crucial year to all sheet metal contractors and warm-air heating dealers, because those who survive this year will more than likely reach the postwar period safely and be in a preferred position to capitalize on the big volume of business that is expected to come to this industry when the demand that has been bottled up by war controls comes to market with oil-gusher capacity.

This is a seller's market. Civilian goods are scarce. Obviously, sales promotion is out for the duration. Contractors and dealers beset by war restrictions must give first thought to elements of operation other than sales promotion if they expect to keep "heads up" this year. Survival-management is the order of the day. After a careful analysis of all the factors touching retail operations in the sheet metal and warm-air heating industries, we have formulated these fifteen guides to survival.

Use Ample Overhead

1. Don't underrate your overhead. Many contractors and dealers do not include all legitimate expenses under overhead, omitting such items as depreciation, allowance for loss on bad debts, loss on inventory, compensation for personal services, etc. Such omissions run high in some establishments and result in two serious defects: (1) They give an erroneous picture of expenses, which tend to unprofitable pricing, even under ceilings; (2) They increase tax expense because the merchant will pay higher income taxes if all expenses are not included in overhead.

Cut Every "Expense"

2. Don't say "I can't cut expenses," because you don't know until you analyze them critically, and too few contractors and dealers do this. Study your overhead expense carefully and you'll be surprised how you can economize here and there by keeping closer tabs on operations. Get maximum value out of wattage burned by keeping light bulbs clean. Keep flues cleaned and the heating system in your own establishment reconditioned as far as priorities permit to get maximum Btu value out of fuel. Repair leaking faucets and toilets. Such little things were disregarded yesterday. Today, with margins slimmed by war restrictions, these little leaks are a more serious threat to survival. Check your insurance policies with your agent. Many in this field are paying too much for coverage or paying for too much coverage.

Keep Careful Stock Records

3. Keep adequate stock control records. You should know what happens to your purchases of materials, supplies and merchandise, so that loss, waste, damage and spoilage can be recorded and minimized. Laxity here is more costly today because materials and equipment are restricted; they cost more and will be harder to get with every passing month. Impress upon all employees the need for rigid economy and careful attention to the elimination of all practices that engender waste and increase costs.

Inventory Every Month

4. Inventory monthly, if you can, but at least quarterly. Once upon a time the members of this industry took inventory annually and thought that enough. Today, you must narrow the gap on stock loss by taking a physical inventory more often, then adjusting the stock control records to agree with the physical count.

Departmentize Wherever Possible

5. Departmentize, so that you know what you earn in each department. Even though you cannot raise prices over ceilings, you should know your departmental profit. Losing money in one department and making it up elsewhere is an old American custom in the sheet metal and warm air heating fields, and it is just as much of a business malpractice under ceilings as it was before ceilings. To apply correctives quickly and properly, you must go directly to the source of trouble and this necessitates departmentizing, keeping the figures for each department separately instead of for the business as a whole.

Add Plenty of Profit

6. Figure selling prices profitably. Beware of slaphappy costing so common in days before Pearl Harbor. Business people may charge less than ceilings and this may induce some short-pricing, particularly if the seller is using an overhead percentage for a previous year that is too low. Just because prices have been frozen is no reason why you should forget everything you ever knew about costing sales. You still have a pricing job to do. Of course, you can't increase prices over ceilings, but you should know whether ceiling prices are profitable today, and the only way you will know this is to cost sales accurately. Include in your costs a war reserve contingency to take care of possible losses through deflation, inflation, gov-

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ernmental restrictions or postwar developments. The percentage? Those using war reserves are figuring $\frac{1}{2}$ of 1 per cent on sales. Also include an allowance for bad debts, depreciation, loss on inventory. Many sheet metal contractors and warm air heating dealers have short-changed themselves on selling prices in the past because their figures did not include these regulation business reserves.

Reduce Unproductive Labor

7. Check closer than ever on unproductive labor to keep it at minimum and list such labor as a separate item under overhead so that it is readily compared month to month. Shop labor paid for, but not spent directly on production, runs too high in many establishments and often it is not checked because it is lumped under direct labor and not earmarked for easy identification. In times like these, there is a tendency for unproductive labor to increase. Delays waiting for hard-to-get items "up" such expense, the scarcity of manpower tends to greater "soldiering" on the part of workers—so, keep this item at minimum ratio to sales.

Keep Money in the Bank

8. Keep adequate working capital on hand, which is the excess of current assets over current liabilities, as shown on your balance sheet or financial statement. Many contractors and dealers consider only the profit on sales and the net worth when appraising managerial efficiency, but working capital, which supplies the life-blood of your business, is of equal importance. A safe ratio today is $2\frac{1}{2}$ of current assets to 1 of current liabilities. The contractor or dealer who finds this ratio on his financial statement should be in a liquid condition, making collections promptly, paying his bills promptly, and, in general, a good candidate for survival.

Do not get caught by the super-charged speed with which the present cycle will gyrate as we near the end of the period. Place adequate reserves in escrow against the demands for higher taxes and other wartime exigencies, which must be paid in cash. Liquidity is more important today than ever. Despite the abundance of currency, the government is cracking down on credit and bank loans, and you will have a harder time getting funds today, so keep your eye on working capital from month to month because you must depend largely on your own bankroll to carry you for the duration. This has one economy advantage. You need not pay interest on your own working capital. Many dealers and contractors carrying heavy receivables in normal times have

to borrow to meet their obligations, which increases expenses unnecessarily.

Pay Off Your Debts

9. If you owe interest-bearing debts and mortgages, liquidate them if you can, to cut interest expense and minimize inflation. President Roosevelt advised this in one of his radio broadcasts.

Don't Buy On Payments

10. Be chary of long-term commitments that will tie up your cash. Expansion is "out" for the duration in most cases. One lesson that the First World War taught was the danger of owning excessive plant or business capacity in an inflated war economy because it reacted adversely when peace came. Expansion brings higher fixed charges and it is unwise to increase your fixed burden at a time like this.

Watch Profit and Loss

11. Analyze your profit and loss statement monthly so that you do not miss a trick on the trend of business. Too many business men, in the past, have been satisfied with annual statements of earnings, and this practice, hazardous enough in peacetime, is a triple threat today. You must plug loss leaks quickly. If you permit too many months to intervene before you analyze the profit and loss statement, it may be too late to correct a defect or a loss leak may assume flood capacity. This is particularly true today because the artificial freezing of prices and other war controls have thrown former yardsticks into the discard and you must watch your expense ratios more closely to appraise all deviations from standards.

Cut Taxes If Possible

12. Tax expense will be high from now on. It can be minimized by close attention to rules and regulations. Savings may be effected on income tax particularly, if you take all legitimate deductions on bad debts, losses on inventory, depreciation, etc. Tax expense is now a major item. Watch it carefully. It may pay you to get assistance from a tax expert for this work. When tax expense was less burdensome, the counsel of an expert may not have effected sufficient saving to pay the toll, but now the reverse may be true.

In general, we suggest that you give more thought to business management in all its ramifications. Attend association meetings more regularly and read your trade papers for pointers on ways and means to survive until the postwar period, for information on governmental regulations, profit-planning under ceilings and instructive articles on trends and developments in our wartime economy.

*The Summer Meeting of the National Warm
Air Heating & Air Conditioning Association
will be May 26, Chicago, Drake Hotel*

Interpretations, Amendments, Easements To Existing Orders

Sale of Attic Fans

American Artisan:

We have had conflicting definitions as to the sale of attic fans. Recently several customers have asked us for information in regards to them. Will you please advise us if we have the right to install one?

Very truly yours,

SUNBEAM HEATING & AIR CONDITIONING CO.

Sunbeam Heating & Air Conditioning Co.:

If you have attic fans in stock you may *not* sell these fans to any builder or any home owner unless the builder or home owner can produce a priority rating of A-1-c until February 28, after which the builder or owner must produce a priority rating of AA-5.

You may *not* order attic fans from your jobber or manufacturer and, under Order L-123, your jobber or manufacturer may *not* sell to you or manufacture for you any attic fan unless it carries a rating of A-1-c until February 28 and after that AA-5.

If these attic fans are for sale to a private home owner, there is no possibility of your getting the required rating. If the sale is to be made to a builder of a housing project for rent to war workers, the project may get an AA-5 rating, but we doubt if attic fans will be included in any war project.

If this sale is to be made to a builder of a war housing project who did not incorporate attic fans in his original project application, but now wishes to use fans, then you must file with Washington office of WPB, Priority Division, a PD-200-b form.

We are advised that a new order L-280 will become effective February 28. This accounts for the February 28 deadline for shifting ratings from A-1-c to AA-5. The new order will cover all types of fans and blowers and will remove all types of fans and blowers from the Machinery Order L-123.

Sincerely yours,

AMERICAN ARTISAN.

L-38, A.C. Equipment

STRICTER control over production and deliveries of refrigerating and air conditioning machinery and equipment has been established by amended General Limitation Order L-38, effective March 27.

The amended order combines the original L-38 with four amendments previously issued and makes some changes in the procedure for obtaining ratings and authorizations. Attached to the order are lists naming equipment that may or may not be produced or may be delivered to specific users; a list naming the purposes for which equipment may be manufactured, and a list naming categories of users of "comfort cooling systems" to whom repair parts, new or used, cannot be delivered except under certain conditions.

The order affects the entire refrigeration and air conditioning industry, including the dealers and distributors of the industry's products. It restricts the

delivery of any new or used parts (a) to emergency repair service as defined in the order and to fill purchase orders bearing a rating of AA-4 or higher, or (b) to fill an authorized purchase order, or (c) to orders for direct use by the armed services. All replaced parts made of metal must be delivered by the owner to the dealer or producer, if required, or disposed of through a scrap dealer within thirty days.

The delivery of any new parts regardless of how they were acquired for inventory (other than for emergency repair service) can be made only on an "authorized order."

Application of the new Form PD-830 for authorization to purchase equipment will be considered only if the equipment it is to be used for an essential use as described on List C of the order. The filing of such an application will relieve the applicant from the necessity of filing an application form for any component part required by Order L-100, L-163, or L-172.

Delivery of new equipment from producer to producer or producer to dealer is not affected.

Welding Rod for Repair

SMALL shops using welding rod for maintenance and without high priority ratings from war contracts may now obtain welding rod under Administrative Order No. 708-18 issued by WPB through regional and district offices. This order authorizes district offices to issue various ratings up to AA-2X for requirements for welding rod to be used for repair and maintenance. Ratings under this order are limited to a maximum value of \$25 or for a 45-day supply, whichever quantity of rod is smaller.

Regional offices may issue ratings up to AA-1 for the same quantity and for the same purpose.

Some earlier announcements on this order gave the impression that the purpose was for rod to repair farm equipment only. This is incorrect; the order intends coverage over rod for all maintenance purposes. Make your application to the district office and send the granted rating to your source of supply.

New Tire Program

OFFICE of Price Administration announces that additional pre-Pearl Harbor and "Victory" tires will be available April 1 to certain lower mileage ration passenger car owners.

The release of these new casings under rationing to "B" and "C" card holders will be for replacement of tires worn beyond the recappable stage.

The order issued by OPA makes it possible for a driver with a mileage ration of more than 240 miles monthly to get new casings of the lower qualities—Grade II—when he needs replacements. Previously only those with monthly mileage over 560 could get new tires. Motorists with mileage rations between 560

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and 1,000 monthly—who until now have been eligible for new casings in the lower quality bracket only—will be able hereafter to get the Grade I tires which previously were reserved for cars with a ration of 1,000 miles or more a month.

The total state quotas of Grade I tires will be about 540,000 against 321,827 in March. State quotas of Grade II tires will also be about 540,000, which will compare with 253,000 for March. There will be a substantial increase in truck tire quotas, too—from 299,000 for March to about 360,000 for April.

Sale of Used A. C. Apparatus

METHODS of pricing used refrigerating and air-conditioning equipment of less than 25 horsepower, which is sold as part of the War Production Board program to convert such equipment for use in war industries, have been announced in Amendment No. 162 to Supplementary Regulation No. 14 of the General Maximum Price Regulation, which, effective May 1, 1943, provides that users of the smaller type equipment may resell it to the manufacturers on a basis of total installed costs less five per cent yearly depreciation.

Manufacturers may resell the smaller equipment on a reconditioned and guaranteed basis to a new user designated by the War Production Board at a price reflecting total cost of equipment to the manufacturer including dismantling, inspection, and shipping costs to the plant in addition to the costs for reconditioning, reshipment to the purchaser, and installation. To these costs the manufacturer may also add out-of-pocket expenses incurred in the sale, plus reasonable charges for engineering and profit, not upon the cost to the manufacturer but in the light of the manufacturer's risk and responsibility. However, manufacturers' prices must be approved by OPA.

Price Procedure Rulings

MPR 236. Boiler Conversion Parts

Applicability—conversion parts made for outmoded boilers. The Regulation is applicable to conversion parts made especially for outmoded boilers.

Price Determination—lump sum charge for parts and installation service. The maximum prices for the sale of conversion parts are specified in cents per pound; the maximum prices for the installation of the parts are, however, computed on an hourly basis. A seller may charge a lump sum for the conversion parts and the installation service in connection therewith, provided the total price charged does not exceed the sum of the maximum prices for the parts and the service.

Price Schedule 45. Roofing Products

Price Determination—discontinuance of customary supply of fixtures with roofing asphalt. Where a manufacturer has established a maximum price for a combination of asphalt roofing and fixtures, but made a customary allowance for sales of the product without the fixtures, and now discontinues the sale of part of the fixtures because of a shortage of the material, he determines the maximum price of the new combination under Schedule No. 45, rather than Regulation No. 188 (Manufacturers' Maximum Prices for Specified Build-

ing Materials and Consumers' Goods other than Apparel). The maximum price for the product with all the fixtures must be reduced to compensate the purchaser for the value of the reduced service of supplying less than the complete pack of fixtures. This reduction may be made by applying the ratio of the cost of the articles in the pack of fixtures to allowances made for the pack, and deducting that proportionate amount for the articles excluded from the pack. Thus, where the established allowance for the fixtures consisting of cement and nails was 10 cents, the seller must first determine the costs of the cement and nails and apply that ratio of costs to the 10 cent differential. The amount thus allocated for the nails is deducted from the established maximum price of the product and fixtures.

Interim Order Conversion

ORDERS for controlled materials placed before the purchaser has received his allotments may be converted into controlled materials orders when allotments are received, by furnishing the supplier with duplicate copies of the purchase orders, certified as provided in CMP regulations. This is ruled under Interpretation No. 5 of CMP Regulation No. 1, April 16. Orders so converted must be treated as authorized controlled materials orders as of the date on which the certification, including the allotment number, is furnished the supplier, not as of the date on which the order was first placed.

However, if the War Production Board has previously expressly authorized the filling of a particular order, it will be treated as an authorized controlled materials order received on the date the authorization reaches the supplier.

New CMP-Class B Symbols

AN ENTIRELY new set of Class B Product Symbols has been assigned to items falling within the jurisdiction of the various Industry Divisions of WPB.

These new symbols replace the former S-3 designation which was used for B Products during the second quarter. The new symbols will not be applicable until the third and subsequent quarters.

The purpose of applying the new symbols to B Products is to provide WPB with a means of determining at mill levels, the uses to which controlled materials will be put. Each symbol indicates a B Product program.

This means that in applying a preference rating to industrial dust-collecting equipment, for example, the preference rating will be accompanied by the symbol J-5, which will give it an up-rating similar to that formerly granted by the use of the symbol S-3.

Some official B Product program identification symbols follow:

Metal doors and windows, fabricated structural metal building products, sheet metal building products (B-7); heat exchangers (G-9); fans, blowers, exhausters, industrial dust collecting equipment (J-5); blast heating coils, warm air distribution equipment such as registers, smoke pipe, etc., warm air furnaces, oil burners, gas conversion burners, domestic stokers, heating system controls (J-8).

HISTORY OF THE

NATIONAL WARM AIR HEATING and AIR CONDITIONING ASSOCIATION

By ... ALLEN W. WILLIAMS

CHAPTER 2

THE FIRST YEARS

In the first installment, published last month, the birth of the Association was described. In January, 1914, leading furnace manufacturers met in Cleveland, agreed upon the need for a national association, formed it, elected its first officers and set up its objects and aims.

In this second installment we learn of the basic work started by committees on cost systems, installation codes, furnace ratings, cooperative publicity and the research program. This takes us up to 1917 when it was first announced that the University of Illinois was willing to join with the Association in a cooperative research in warm air furnace heating.

John D. Green, the Association's first president, enjoyed the confidence of the entire industry and the organization prospered from its start under his guidance and that of the officers chosen with him.

The sub-committees which had been appointed from the Executive Committee were diligent and at the Association's convention held in Cleveland, February 17, 1915, reported upon the subjects which had been assigned to them.

Uniform Cost System

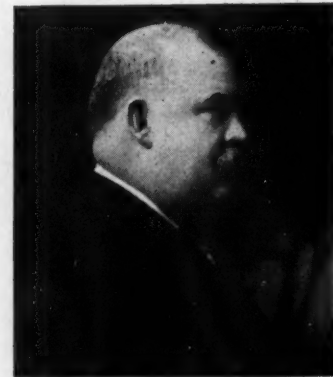
The committee which was directed to secure a "Uniform Cost System for Furnace Manufacturers" presented a very complete one which had been formulated by the cost expert of the National Association of Stove Manufacturers. It was approved and later published and distributed in printed form. The cost of this to the Association was five hundred dollars.

Installation Codes

Another committee presented for consideration a formula or set of rules for the installation of warm air heating plants which it was hoped might be acceptable. This was the start of the Association's now generally accepted Installation Codes, which have been of inestimable benefit to the furnace industry, its distributors and the public.

D. Rait Richardson, chairman of this latter committee, presented the formula with the statement that satisfactory results from the installation of warm air furnaces were too dependent upon lucky guessing on the part of the installer, which was a situation that should be corrected without delay; that the rules which his committee offered were simple, workable,

The Association's
first president ...
John D. Green,
of Detroit, Mich.
He served from
1914 to 1917.



impartial and provided for a certain amount of flexibility; that his committee admitted the formula offered was not perfect but believed it was at least a step in the right direction.

The formula was adopted and in later years it has been conceded that in view of the lack of engineering data, it was a remarkably good job and blazed the way for something better.

Furnace Ratings

It was also at the Association's meeting on June 9, 1915, that President Green had this to say relative to the need for the correct rating of furnace capacities:

"There is a growing sentiment favoring a reasonably accurate method for rating the capacity of warm air furnaces. I find that a considerable number of makes of warm air furnaces favor the so-called 'pipe area' method instead of rating heaters according to the number of cubic feet of space they are supposed to heat. As near as I am able to ascertain very few makers of these goods are familiar with methods of testing their furnaces in order to determine the number of cubic feet of space that they will heat.

"I recommend the appointment of a committee to formulate a simple, accurate, standard method for rating warm air heaters by the use of which all makers can place correct heating capacity values on their own furnaces."

City Ordinances

Early in 1915 the importance to the furnace industry and the public of fair and proper city building codes was considered and a special committee, which had been previously appointed, presented a tentative form for such an ordinance that might be

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adopted by city authorities in any locality where legislation governing the installation of warm air heating was proposed or desired. While no immediate action was taken, the idea of watching and guiding legislation affecting the installation of the furnace industry's products was approved and later became one of the vital and sometimes trying purposes of the Association.

Publicity Campaign

At the June, 1915, convention the matter of a National Cooperative Publicity Campaign to be sponsored by the Association was first seriously considered. A special committee which had been appointed to study the subject and submit its recommendations reported that it felt action by the Association was absolutely essential. While members did more or less advertising it did not reach the general public and a campaign to that end should start at once. Thus the committee recommended a special fund of not less than \$25,000 be raised for advertising purposes to be expended during the ensuing twelve months. The Association enthusiastically approved the committee's recommendation and plans for the Association's first advertising campaign was launched almost as a matter of course.

The Association's first trade mark.



A report at the annual convention in Cleveland, June 6, 1916, indicates that \$27,258 was contributed to this campaign which used space in the Saturday Evening Post, Country Gentleman, Successful Farmer, Farm Journal and certain smaller magazines. Electrotypes were furnished to dealers for use in space advertisements in their local papers. A good-looking booklet in colors was also published for distribution to consumer prospects. The Association's first trade mark appeared in all of the organization's advertisements, in members' catalogs and on their stationery and upon metal signs furnished to hundreds of dealer customers. This insignia became widely known and was used for many years.

While the Association's first adventure in cooperative advertising was modest in amount expended, space used and period covered, it was generally agreed that it had been well worth while for it had placed the furnace system of heating before the public in a favorable manner, had been a great encouragement to dealers and created a respect for the industry and its products on the part of all concerned. Incidentally, it had emphasized to the manufacturers of furnaces and their appurtenances the fact that they must have more correct and unbiased engineering data so that installations might be improved.

At the January, 1916, convention the desire of the membership for a continuation of the publicity and advertising campaign was marked and it was agreed the amount to be expended for that activity during the coming year should be \$50,000, double the first appropriation, and that nothing less than a fund of \$40,000 would assure a continuance of the campaign.

A canvas extending over several months resulted,

however, in pledges to the proposed fund of \$33,000. This was short of the minimum amount desired and it was decided at the convention in June, 1917, not to continue the campaign. The First World War was on by then. Cooperative publicity and advertising as sponsored by the Association was not lost sight of, however, and another campaign followed a few years later.

Research

An interesting feature of the Association's Detroit convention in June, 1915, was an address by Arthur C. Willard, at that time Assistant Professor of Heating and Ventilating and later Professor and Head of the Department of Mechanical Engineering at the University of Illinois. Later, after serving as Acting Dean of the College of Engineering, he was chosen in 1934 as President of that University.

It was Professor Willard who stated almost prophetically at one of the Association's meetings, "Your job will not be finished until a house is comfortable every day in the year."

The subject of his address was, "Testing Warm Air Furnaces for Efficiency and Commercial Ratings," in which he made it very clear that in common practice riser areas at that time were too small, which was very detrimental to economical and effective heating. This was only one of the many helpful facts which he presented and discussed.

At the conclusion of his address the Association voted to approve the recommendations he made, showing their appreciation further by conferring an honorary membership in the Association upon him.

In June, 1917, Professor Willard again accepted a place upon the Association's program. The title of his address on that occasion was "Advancing Furnace Heating."

Professor Willard at that time made memorable history, for during his talk he indicated the University of Illinois was willing to join with the Association in a cooperative research in warm air furnace heating. In his address, he pointed out:

"The furnace manufacturers may advance the position of furnace heating in the general heating field in three ways:

"First: By perfecting the design of the furnace itself and the accessories, in order to secure greater efficiency and simplicity of operation and installation.

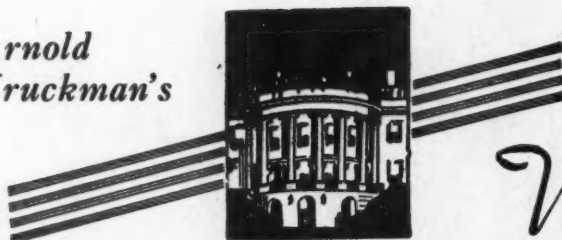
"Second: Educate the furnace men in the simple principles on which the warm air furnace operates, and the correct methods of installation.

"Third: Educate the public to understand the advantages of furnace heating, and to operate and care for a furnace system properly.

"The furnace manufacturers can directly control the first condition, but must depend on and cooperate with a variety of interests to accomplish the last two conditions. They make a product and stake their reputation on its performance, but this performance is vitally dependent on the methods and care used in installation as well as in operation. The public judges by results, and if they are unsatisfactory, not only is the particular furnace that has been installed condemned, but very often the system of furnace heating in general is branded a failure. If a heating system when installed can't be operated successfully by the average householder, what good is it?

In the next Chapter, to appear next month, Professor Willard discusses each of the above three ways of advancing the position of furnace heating and the Association takes action on the proposal for co-operative research with the University.

Arnold
Kruckman's



Washington Letter

Furnaces Under CMP

AS THIS May issue Washington Letter is being mailed, the warm air furnace industry advisory committee is meeting with officials of WPB to determine what will be done about furnace production for 1943. It seems that something definite may come out of the meeting—perhaps nothing will develop. Some persons are glum over the whole thing—others believe an understanding will be reached.

Until the official announcement is made there can be only speculation, but one conclusion can be forecast. That conclusion is—any quotas set under an L-22 order (when, if or how passed) will be meaningless because each furnace manufacturer operates under a CMP material quota and this CMP quota determines how many furnaces the manufacturer can produce. Furthermore, these CMP quotas change month by month according to how much material is left over after the war departments take their requirements.

What's Happened to L-22

The furnace order which was reported in detail in these columns in September, 1942, survived various operations and treatments in the WPB hospitals for six months. Then it died and a new order was patched together. The new order, which is the present proposed L-22—or whatever they will finally call it—has been through the various clinics for more than six months. By the most recent reports from the WPB, the order was on the desk of Mr. James Ernest Auten, pronounced awtn. Auten, if you don't chance to know, is the new head of the Construction and Utilities Bureau, of which the Plumbing and Heating Division is a part. Mr. Auten succeeded John Hall, of ARCO, who was elevated to the General Staff of WPB as Deputy Vice Chairman for Industry Operations. Auten, who comes from Ohio, is head of the Barber Asphalt Company, and has had a very full industrial career which includes the Sterling Boiler Co. and the B. F. Goodrich Rubber Company, and a varied number of corporations in which he functioned as everything from a simple mechanic to chief executive. Auten is the Horatio Alger type of American, of whom we have distinctly too few these days. In his detailed biography in *Who's Who* he lays heavy emphasis on the fact that he received his engineering and technical education by means of mail order courses from a famous correspondence school.

Auten is the old-fashioned type of executive who wants to know all about things. Long before they knew who he was they used to see him meandering around the Plumbing and Heating Division, picking up acquaintances in a casual and friendly way, and discovering things that had a bearing on many subsequent actions. The furnace order, for instance, was

going merrily on its rounds of the 88 or 188 officials who have to be invited to make comment, when Auten threw a monkeywrench in the traditional procedure by serving notice that nothing would happen until he had given it detailed and close study. He apparently had heard enough to feel that it required his personal attention, and the word is that the proposed order has been on his desk ever since.

50,000 or 150,000 Furnaces?

Obviously any discussion of something that has not crystalized into action or form here is speculation. There are very sound reasons, however, for thinking that Morgan N. Johnston, the GE man, who fathered and nursed the proposed furnace order, in essence left it practically as we reported it last September. Johnston may have been reported to favor a limitation holding production for civilian replacements to 50,000, cast iron, gravity coal-burning, furnaces in 1943, but it is quite certain that the report is wrong. Due to the fact that he badly misunderstands the technique of maintaining realistic public relations, Johnston has been quite generally misunderstood. The facts are that Johnston, like other more experienced experts in the furnace business, seems to be sold on the fact that the normal market volume of furnaces for replacement and similar needs totals something like 300,000 per annum. And it is understood he feels that under present conditions, without the normal application of salesmanship, the minimum requirement for civilian needs should be pitched at 150,000 furnaces. Apparently the idea has been to distribute the permission to manufacture the totality of furnaces among the A and B class firms, large and small, much as we outlined the plan here months ago.

However, since the original order was formulated, we have had another phenomenon, our much battered friend the Controlled Materials Plan. Probably part of the present hitch in delivering the furnace order is due to the puzzle about how to reconcile the order as issued by the Plumbing and Heating Division of the Construction and Utilities Bureau of the War Production Board with the independent processing that will come from the Office of Civilian Supplies and the Requirements Committee of the Controlled Materials Plan, plus finally the all-highest Review Committee of WPB headed by Donald Nelson.

Liners and Casings Are Headache

As you know, there is no real trouble about getting enough pig iron (though the metallurgy is questionable) to make 150,000 furnaces for the forgotten man of the war, the Civilian Consumer. But there is said to be an awful lot of trouble about getting the steel

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necessary for the liners and casings. You can only get this steel by means of securing the approval of the CMP set-up. In order that the Plumbing and Heating Division may obtain for your industry the steel necessary to make the required number of liners and casings for the 150,000 furnaces, the Plumbing and Heating Division, through its Construction and Utilities Bureau, must place before the Office of Civilian Supply the requisition for the quantity of steel you will need.

Since sheets for liners and casings are harder to get than pig and scrap for the furnace bodies, the easiest solution would be for the manufacturers to sell the furnace to the dealer without any casing and let the dealer make his own casing—getting the sheets as best he can. And, generally, he is getting some.

Weiner May Change His Mind

The paradox in this particular matter of furnaces is the singular fact that Joe Weiner, the human catalyst for the Office of Civilian Supplies, has placed on record that he thinks 56,000 furnaces are more than abundant for all the needs of the non-essential civilians. It obviously will become part of the problem how to convert Weiner, who must champion your steel requisition before CMP, to an agreement with the fact that you need enough steel for 150,000 furnaces.

There has been an *apparent* change in Weiner's point of view. He has been saying stirring things about the neglect of the civilian to important bodies like the Senate Banking and Currency Committee. If Weiner's conversion to the revival of the privileges of the forgotten civilian were not so entangled with other shifts and changes here we would be justified in waving flags and raising the roofs with our deafening cheers. We will try to make this involved Civilian Supply battle a little clearer later.

At this moment it is the considered opinion you stand a very good chance of blasting free enough steel for manufacturing to furnish the liners and casings for the cast iron furnaces or the dealer may make the casing. In the welter of confusing information about steel it seems reasonable to believe that the surplus of material, and the surplus of productive facilities, and the temporary stagnation of movement due to the mishaps on the seas, has made a surplus of lighter sheets available for civilian uses. It would be possible to quote figures. There are an abundance of figures to be had. The trouble is that the figures make you wonder who is a liar. Some officials are very eager to prove there is no surplus of metal, and that there is no remote hope that there may be a surplus of metal. Others moderately reiterate there is a surplus. The truth, of course, is somewhere between, and that works out into an equation of *some* surplus. It seems quite certain, however, that there is a surplus of lighter sheets available for your needs. To get it for whatever you have in mind is the job.

Steel Furnaces From Rejects

The situation surrounding production of steel furnaces and abolishment of L-22A is still more confused. If we speak of prime quality, standard sized, plates of the quality formerly used—the scarcity seems probable. On the other hand, a couple of researchers have dug out the fact that there is as rejects, out-sized, off-fall "odds and ends" quite a surprising tonnage of plate which can be used for no better purpose than to make furnaces. If this tonnage of "odds and ends" could be channeled into furnaces, steel furnace pro-

duction could be resumed without taking anything away from the war effort.

Fuel Oil Is Not "Easier"

The same holds good for that good authority who seems to be spreading around the word that fuel oil will be easier, and that the prohibition against replacement of oil-burning furnaces with oil-burning furnaces will be lifted. It seems more likely that the potential supply of fuel oil does not justify substitution of oil for oil, and does not justify cessation of the drive to induce people to change to the use of coal. We are told here that the Middle West, the same as the East, will be Government high-pressured to convert to coal-burning equipment. It is even possible that coal may be rationed.

You should be able to understand the situation by contemplating the fact that even the Army is converting some oil burning equipment to coal. We are told, in fact, that such conversion is quite general. Naturally Army would not convert if it felt that oil would be plentiful. And more than any of us civilians, Army should have the inside tip. They tell us here at least 2½ times as much fuel oil of all kinds will be placed on tankers for shipment by Fall. That certainly illustrates that fuel oil will be absorbed in huge quantities which will not leave much for domestic needs.

Utilities Can't Deliver Gas

And do not have hopes about the relaxation of the gas order for gas-burning equipment. In theory, as you probably know, gas-burning equipment is not prohibited. There is no order against it. But the public utility which supplies the gas must assume the responsibility. The order says the public utility may supply the gas for domestic uses IF the utility will guarantee there will be no shortage of gas. Now, since this involves the supply of gas to industrial units, and for municipal and Government needs, and for the many other uses to which gas is put in our economy; and since the public utility almost invariably can make far more money out of industry and Government and municipalities under present circumstances, it is very obvious why the public utility would lack common horse sense if it undertook to guarantee no shortage by reason of its service to an element that is less profitable than the units it serves.

Civilian Supply Claimant Agency

You really cannot understand clearly the over-all picture which vitally affects your business unless you understand what is happening in connection with Civilian Supply, WPB, Weiner, Nelson, the Congress, and the Army and Navy. And the White House. We told you last month about S-885, the Senate Bill, to create an independent Civilian Supply Administration. That bill was rewritten after the hearings in the Senate Banking and Currency Committee. They eliminated the phrases which authorized the creation by the Federal Government of a system of manufactories, warehouses, and retailers in any industry necessary for the support of the civilian economy; but the Bill was rewritten in such a manner that it seems certain there is in it the power to do these things, when they are coupled with the power already inherent in the War laws at hand for the President.

The Bill will undoubtedly pass the Senate. There is an extremely strong sentiment for it in the Senate

(Continued on page 87)

On Our Industry's Front

Easier Heating Repairs

THE importance of providing a more workable means whereby plumbing and heating repair and replacement items can be obtained by the civilian was stressed by members of the Plumbing and Heating Distributors Industry Advisory Committee at a meeting with government officials in Washington.

Committee members urged the establishment of a preference rating sufficiently high to enable the distributor to obtain repair parts and complete replacement units from the manufacturer.

They also urged that certifications to obtain repair parts call for signature by the consumer only. This certification would be retained in the files of the person selling the repair part to the consumer.

The members also recommended that certification covering a complete replacement unit be strengthened and the order so written that this certification would be forwarded to the distributor, who would retain it in his file for possible inspection by the WPB Compliance Division. It was suggested that such certifications be signed by consumer and installer, and that complete replacement units for which this certification is necessary should be enumerated in a definite list which should be part of a formal WPB order.

These recommendations were taken under advisement by WPB officials.

The committee urged a revision of Order L-79 to permit wholesalers and plumbers to dispose of slow-moving deluxe type equipment, most of which is now frozen in stock.

Ceramic Heaters

CERAMIC space heaters and ceramic stoves may be available shortly for American purchasers. The problem has been to develop a heater which would be light in weight, easy to assemble and capable of withstanding thermal shock and ordinary wear incidental to use.

While designs and details of the various types of European heaters and stoves were available, there was no available data on composition of bodies. Also, European stoves were of very heavy construction and depended on radiation and retention of heat in the thick walls to maintain desired temperatures, while it was the aim of the Clay Products Section to produce a heater with comparatively thin walls, depending on swift passage of air through a pre-heated chamber or chambers to achieve the desired heat.

The first heater made by a terra cotta company was constructed of stock pieces of material for the main body of the stove, using fire-brick for the ash pit and base. The first test was satisfactory from the standpoint of heat produced; a temperature of 260 degrees Fahrenheit was achieved at a point six inches above the top of the heater, and this heat was held for a period of five hours without the addition of any fuel. Hard coal was used in this test.

The test indicated there would be a lower fuel con-

sumption than would be needed for a metal stove of proportionate size, and that the ceramic heater had heat retention properties far above those of a metal stove. This was taken to indicate that, properly fired at regular intervals, the ceramic stove would retain almost a uniform heat without the necessity of bringing the heat up with each firing.

As a result of the initial test, it was decided to seek the cooperation of the Office of Production Research and Development. That office in turn has awarded a contract to Ohio State University, under the supervision of Dr. G. A. Bole, of the Ceramic Engineering Department, to develop suitable bodies which should be light in weight, of high tensile strength, and capable of withstanding thermal shocks experienced in quick heating.

New L-79 Appeal Form

ORDER L-79 prohibits a home owner obtaining many types of new plumbing and heating equipment unless permission can be obtained by a special appeal letter sent to Washington. Such letters are often difficult to write and appeals may be denied because the letter did not give all the facts.

In an effort to simplify and to unify these appeals, WPB has now prepared a new appeal form, PD-851, which can be obtained from any local WPB office and which is filled in and returned to the local office for processing instead of being sent to Washington, as was the letter. This is another effort of WPB to decentralize work.

PD-851 should not be used to obtain plumbing and heating equipment for repair and replacement of existing equipment. Such repair items should be obtained under Order P-84. PD-851 should not be used to acquire any item which is rationed by OPA.

"Winterize" Campaign

A NATION-WIDE fuel conservation drive in which several agencies of the government will cooperate is soon to begin. Home owners will be encouraged to proceed now with the installation of heat preservatives such as insulation, storm sash and weatherstripping, as well as with the conversion of heating plants to conserve critical fuels.

To assist manufacturers and dealers in spreading this work through the spring and summer, thus avoiding congestion of orders and possible labor and material shortages in the fall, the Federal Housing Administration is offering a special delayed payment plan of financing for this type of work. Under this new plan, Title I loans up to \$2,500 can be made for heat conservation installations and heating plant conversion between now and September 1, with the first payment delayed until as late as November 1, 1943. This is strictly a wartime measure and applies only to fuel conservation work specifically prescribed in the attached Amendment. If other types of work are in-

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Loans to finance the cost of this work are excluded from the limitations of "Regulation W" of the Federal Reserve Board. Further, in recognition of the urgent necessity of heat conservation, an authorization from the WPB is not required to begin such work. (WPB Order L-41 (b), as amended December 21, 1942.)

It is hoped this special plan of financing will assist industry in overcoming the sales resistance often encountered when prospects are asked to purchase immediately materials and services which may not be needed for several months. Manufacturers and industries whose products are related to fuel conservation are urged to participate actively in this nation-wide program.

To get this program to the attention of all home owners, a comprehensive radio broadcasting schedule has been worked out. The program begins the week of May 3 and ends the week of May 24. In brief, this radio "Winterize" campaign is set up thus—

Week of May 3

Thirty-nine leading network radio programs, daytime and night, commercial and sustaining, will advocate Convert to Coal, Buy Coal Now, Make Homes Heat-tight.

Week of May 10

Thirty-nine network sustaining and commercial shows will popularize "Get Ready for Winter Now" by converting, winterizing, laying in fuel. Also in this week, 850 radio stations now broadcasting five times a week quarter-hour "Uncle Sam" war programs will change one of the five programs to Winterize.

Week of May 17

Practically every radio station in the country has agreed to carry one-minute spot announcements, three times a day, telling why everyone should "Get Ready for Winter," and what to do.

Week of May 24

Again some 850 stations will give three one-minute spot announcements each day to "Winterize."

Also this week, the NBC-OWL "Neighborhood Call" quarter hour program will be all about "Get Ready for Winter." About 635 stations will broadcast this program.

Steel Recovery Progress

"FROZEN steel" produced for automobiles, household equipment and other items before their manufacture was stopped is being located and put to war uses at the rate of more than 70,000 tons monthly, according to WPB's Steel Division.

Last spring the WPB took steps to get the idle steel into war production. Steel Recovery Corporation was formed in May, 1942, with an allotment of 400 million dollars from Metals Reserve Corporation, an RFC subsidiary, to find the steel and its logical users and bring them together in the quickest possible time.

In October, over 300,000 inquiry forms were sent to possible holders of steel, requesting information on any idle stocks possessed by them. When the replies came in and the information was analyzed, another questionnaire, over 100,000 of them, was sent to those

concerns which stated they had steel available. This second form elicited detailed information on what was held. The facts are now being tabulated in the Office of the Steel Recovery Corporation at Pittsburgh and each day the organization issues a detailed catalog of available steel which is sent to prospective purchasers. Other catalogs listing the steel and its holders in given regions also are issued and mailed to each territory.

It is expected the volume of steel being moved will reach its peak in May, continue on that level for several months, then gradually decline as supplies are exhausted. It is estimated that steel will be forthcoming from over 100,000 inventories, covering 17 varieties and aggregating perhaps 2 million items.

The idle steel is divided into two classes: "as-is" and "remelt." As-is steel can be used in its present condition or after some re-rolling or re-processing. There is quite a volume of steel, partially or wholly fabricated, whose only possible use in the war effort is to be returned to the steel mills for remelting.

Where the steel can be used in its present form, the Steel Recovery Corporation merely puts buyer in touch with seller and negotiations are conducted by them under present price ceilings. Where re-rolling or re-processing is necessary, the Government buys the steel at what is known as "limited cost" and turns the metal over to the new purchaser at the market price, absorbing any loss.

When remelting is the only solution, SRC pays the "Government price," which runs from 15 per cent to 30 per cent below "limited cost." The corporation then sells the metal to a steel mill at the regular scrap price, absorbing the loss. In such cases, holders of the excess steel receive up to four to six times the price they would have derived if they themselves had sold the metal as scrap.

WMC's Essential Industries

WAR Manpower Commission, effective April 17, issued a revised list of essential industries and activities. In the revised list our industry finds itself classified as essential under Appendix A, list 31 (Repair Services), including the repair of heating equipment, roofing, heating installations in domestic, commercial and industrial buildings. We are also classified under list 8 (Construction), including construction of approved industrial plants, houses; and repair of such facilities.

The Chicago office of WMC states that under the latest rulings any workman, no matter what he does, who is working for an employer in an essential activity, is an essential worker. At one time we were told that an estimator was essential, but a journeyman not essential. This, presumably, has now been changed.

Therefore, since a firm doing heating work, new construction, repair and maintenance work is essential, every employee of that firm and every employer must be governed by the April 17 regulations on job changing. These April 17 rulings on job changing are published below.

TITLE 29—LABOR

CHAPTER VII—WAR MANPOWER COMMISSION PART 904—RESTRICTING TRANSFER OF WORKERS (Regulation No. 4)

904.1. Workers Previously Engaged in Other Than Essential Activities for Work in Essential Activities. Any
(Continued on page 91)

NATIONAL WARM AIR HEATING AND AIR CONDITIONING ASSOCIATION



Says



FURNACE MANUFACTURERS' OPINIONS OF POSTWAR PRODUCTS

WE have had an opportunity to review the comments of a number of manufacturers in the warm air heating industry in connection with the kinds of heating plants we are going to sell after the war and the trends with respect to housing. Below we give the composite opinions of a number of manufacturers. These are opinions only, but they should throw some light on developments for the post-war market:

What Kind of Heating Plants

The consensus of opinion seems to be that the sale of conventional units used before the war will continue in substantial volume after the war. Also, that there will be a heavier demand for automatic systems and particularly forced warm air. That because of the wider use of insulation in old homes and the almost universal acceptance of insulation for all new homes and because space will be at a premium, particularly in the small basementless home, heating units and the distributing system will have to be more compact. The fuel to be used will be that which is popular in the community.

What Kind of Housing?

The opinion seems to be that houses will be smaller, much better mechanically equipped than in the past, and that many of them will be built out in what we used to call the country, where super highways

and fast economical cars will simplify the commuting problems.

Individualistic Houses?

The general opinion is yes. The home is the most highly prized single possession a family can have. Standardized low cost houses are a thing of necessity. Homes will always give expression to an individual's desires and those who are in a financial position will find expression in these desires in tailor made homes.

Is Pre-fab Coming?

The impression seems to be that the pre-fabricated house will be an important item, but there is a question as to the volume it will reach. Many parts and features of pre-fabrication will be used in home construction reducing the man-hours or total labor used on the job.

What Kind of Furnaces?

Greater compactness of units, better design, more fool-proof and better control in forced warm air equipment so as to produce a smoother regulation of room temperature. Something should be done with the controls and also with the location of warm air and cold air outlets so as to produce warm floors and perfectly satisfactory heating conditions in basementless homes. Coal-fired equipment will have to be smaller and

better methods of controlling it should be developed.

Installation and Approval

Installations will be much improved because of greater interest on the part of dealers and installers and because of demands of the home producer and the home owner. Ultimately we can look forward to installations, including equipment, bearing a nationally accepted standard seal of approval. *Controlled Indoor Climate* for greater comfort and health will not only be an objective but will be demanded. A greatly improved service in the industry, compared to past standards, will bring greater profit opportunities to home owners through better comfort, health and economy of operation, as well as a higher level of profit for the entire industry.

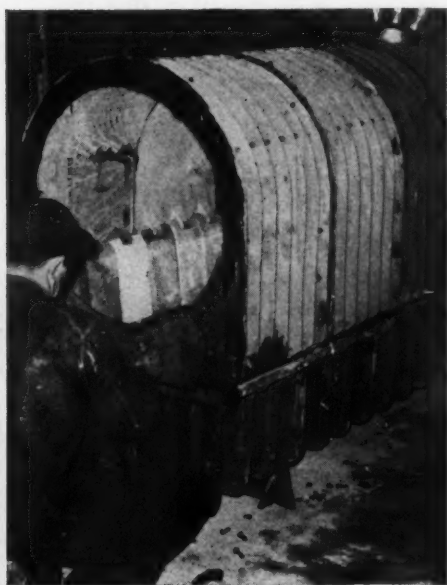
Geo. Boeddener
Managing Director

Attend the
National Warm Air
Heating and
Air Conditioning
Association Meeting
at the
Drake Hotel in Chicago
May 26

AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING

S E C T I O N




DEVOTED TO HOME AND SMALL® COMMERCIAL AIR CONDITIONING



Design ...

Makes "Detroit" Air Filters Superior!

The one thing above all others which makes "Detroit" Filters so efficient is the design. The incoming dirt-laden air scrubs along the walls of the cellular inlet passages, is given an abrupt change of direction, like this , then scrubs the walls of the outlet passages, and emerges, clean and dustless. Thus, dirt is deposited throughout the entire depth of the filter, not merely on the surface. *That's why "Detroit" Filters have such low resistance to air flow.*

The fibre passages are impregnated with non-dripping and odorless adhesive which catches the dirt. This dirt soaks up the adhesive, and in turn becomes the dirt catcher. *That's why "Detroit" Filters maintain their efficiency for so long a time.*

All the passages are uniform in size and shape. There are no dense and no comparatively empty spots. Thus the air flow is distributed evenly throughout the entire Filter. *That's why "Detroit" Filters do such a thorough job of cleaning all the air.*

THAT'S WHY DESIGN MAKES "DETROIT" AIR FILTERS SUPERIOR



Replacement filter business is profitable. Sell your customers "Detroit" Air Filters now.

An attractive envelope stuffer is available imprinted with your name. If you want some to send out to your customers, drop us a line on your letterhead.

Check these features:

- ✓ **ECONOMY**—Patented cellular design gives more filtering capacity per dollar.
- ✓ **FREE AIR FLOW**—Uniform air distribution assures free flow with maximum filtering.
- ✓ **DUST CAPACITY**—Thoroughly impregnated with special non-dripping compound to retain dust collecting ability indefinitely.
- ✓ **ODORLESS**—Adhesive material is absolutely odorless and will not turn rancid.
- ✓ **LONG LIFE**—Entire thickness of filter used in cleaning, thus providing long and efficient filtering.
- ✓ **STRENGTH**—Selected materials and sturdy construction prevent sagging. No danger of small particles being carried into air stream.
- ✓ **POLLEN**—Highly effective in providing relief for persons allergic to air-borne pollen.
- ✓ **CLEANING**—Guaranteed factory cleaning and renewal service when necessary—a further economy.

*No critical materials are used in the construction of "Detroit" Air Filters.



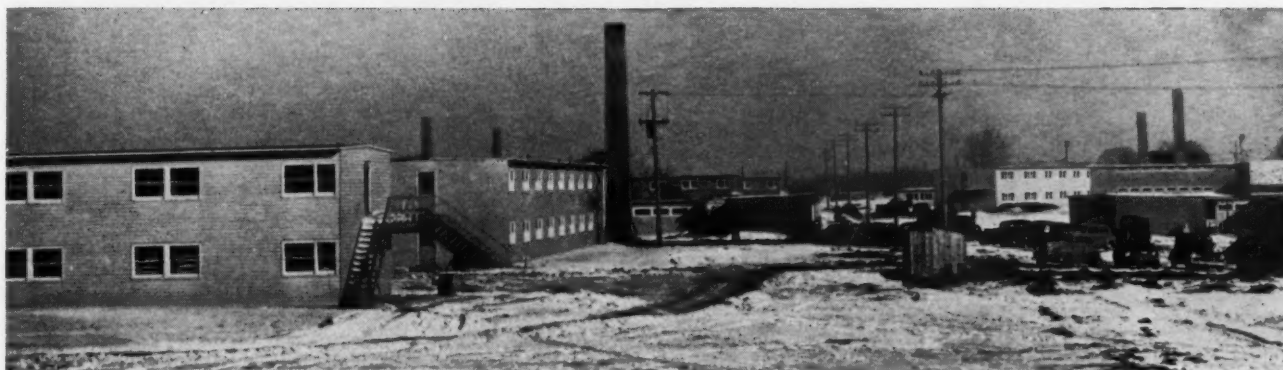
DETROIT LUBRICATOR COMPANY

General Offices: DETROIT, MICHIGAN

Division of AMERICAN Radiator and "Standard" Sanitary Corporation

Canadian Representatives—Railway and Engineering Specialties Limited, Montreal, Toronto, Winnipeg





A photograph from the ground to show a dormitory is impossible, but this shows two-story wings (left) and chimney for furnace room below. See plan below.

War Worker Dormitory Heating System

ONE of the troublesome problems facing war production has been and still is adequate and convenient housing for war plant workers. Especially is this so at the tremendous new war plants which, for sound reasons, have so frequently been located in isolated communities or on the far outskirts of large cities. To house workers of these plants, complete new housing facilities, including all public services, must be erected. The problem is further complicated by the expectation that much of this housing should be of a temporary nature.

Many solutions have been tried—there are the thousands of single family houses such as those at Baltimore; there are the multi-apartment buildings described in past issues of *AMERICAN*

ARTISAN; there are row houses, six-family houses, double houses and so on through the complete list of structures stemming from peace times.

The Dormitory

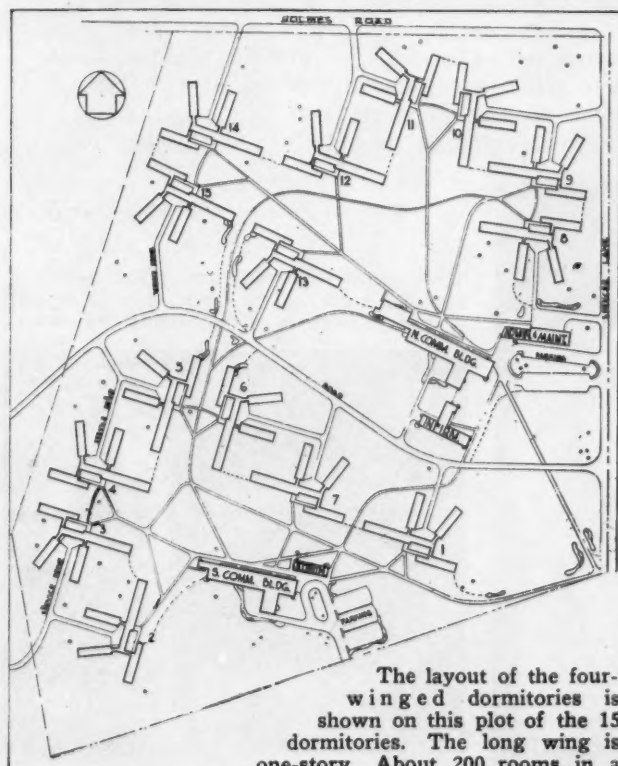
The outstanding, war time structure, designed specifically to meet the conditions described above is the dormitory. This article describes a typical dormitory project to house workers in the Willow Run bomber plant twenty miles from Detroit and near Ypsilanti—a town which never could accommodate the 30,000 workers in the bomber plant.

As of the first of this year the FPHA had completed, under construction, or projected about 50,000 housing units in dormitories in continental United States. Roughly, these dormitory projects are designed for single workers or man and wife, and not for families. In a typical project, there will be dormitories set aside for men, others for women, others for man and wife. Each occupant has a private room; in each building there are communal toilets, baths, laundry, lounge, and for the project as a whole there are community or recreation buildings, administrative buildings, and miscellaneous stores, special service, etc., buildings.

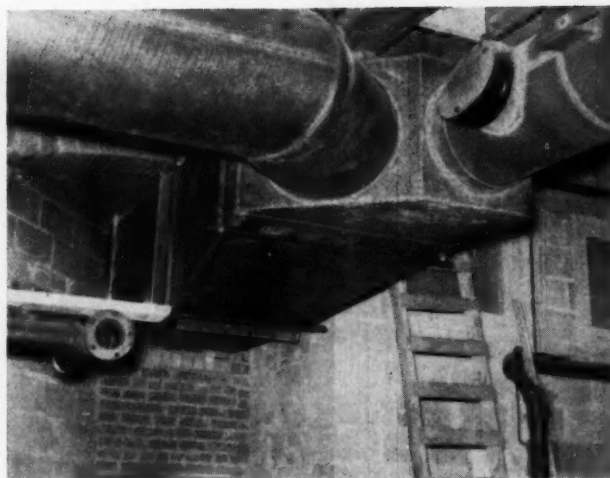
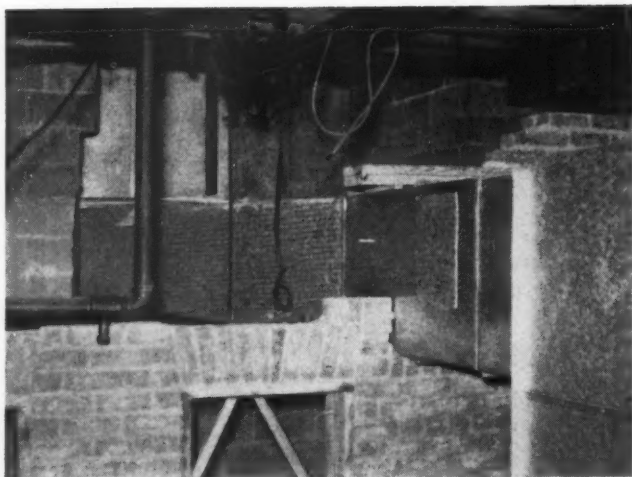
In the project for Willow Run there are 15 dormitory buildings, two community buildings, two administrative buildings, an infirmary. The general layout of each dormitory is interesting and is best shown on the project plan, reproduced here. In each building there is one single-story wing and three two-story wings. Each wing has a central hallway with cubicles along each outside wall. The heating plant arrangement is two hand-fired coal, forced warm air, cast iron horizontal furnaces with distributing mains running through the corridors and stub branches opening into each room above the door.

Of particular interest to the heating industry, this article describes the heating plants installed and some of the problems of installation in projects of this nature.

The installing heating contractor on this Ypsi-



The layout of the four-winged dormitories is shown on this plot of the 15 dormitories. The long wing is one-story. About 200 rooms in a building.



Left—Bricked return air plenum. Also back edge of casing and the warm air main which serves the big riser in background. Right—12 and 14 gauge black iron breeching built by a boiler plant and erected by Sunbeam.

lanti project was Sunbeam Heating & Air Conditioning Company of Chicago. Snyder and McLean, Detroit, were the mechanical engineers for all the heating design in the project. Work began on December 1, 1942, and was just being finished at the end of April, 1943. The progress for a job of this size was, evidently, not smooth sailing so, in explanation, perhaps some of the tribulations of the heating contractor on a project of this type may be useful to contractors who may want to participate in the future dormitory program predicted by Washington agencies.

Project Headaches

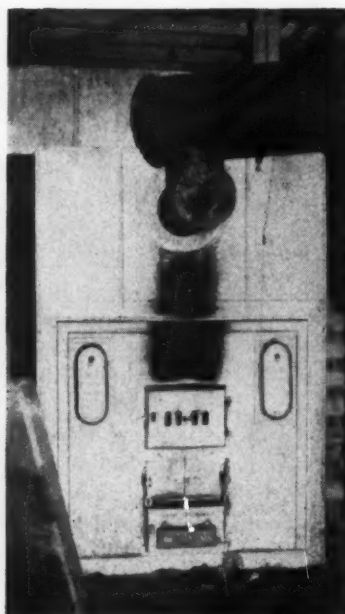
First, let's take the matter of materials. Originally, all the duct work was designed for galvanized iron or black iron. But the Detroit WPB said—"No, these are temporary buildings, so you must use no critical materials." So ducts were redesigned for asbestos, or asbestos-cement or some other non-metallic material using metal connectors of the type developed by our industry. "No

metal," insisted WPB, "you'll have to find some way of putting the material together without metal." There resulted several weeks during which everyone went round and round without reaching any usable conclusion—and the project stood still.

Finally the solution was found in Sall Mountain asbestos prefabricated ducts, which requires no metal for the longitudinal seams but does require metal to join the sections together. WPB granted that this saved most of the metal and granted priority for enough metal to put the duct work together.

Right here it can be noted that the final construction requires 201,000 square feet of Sal-Mo supply ducts and about 40,000 pounds of hot rolled black iron. This 40,000 pounds of metal was used for connectors to join sections together. Each branch which leaves the corridor main and connects with the room register is also metal. All heater room duct work from fan housing to casing, from plenum to supply riser is hot rolled

Left—Floral City cast iron "horizontal" heater being assembled for temporary heat, before fans or ducts were connected.



The result was red hot furnaces (note scorched front). This ignorance was typical of many headaches of the heating contractor.



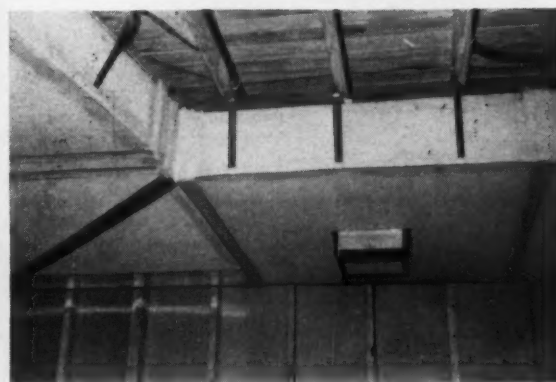
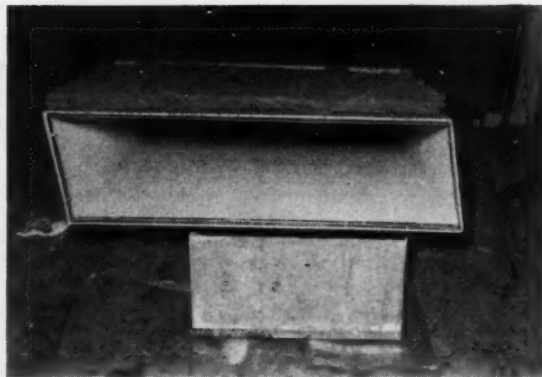
Left—Typical duct section of Sal-Mo riser

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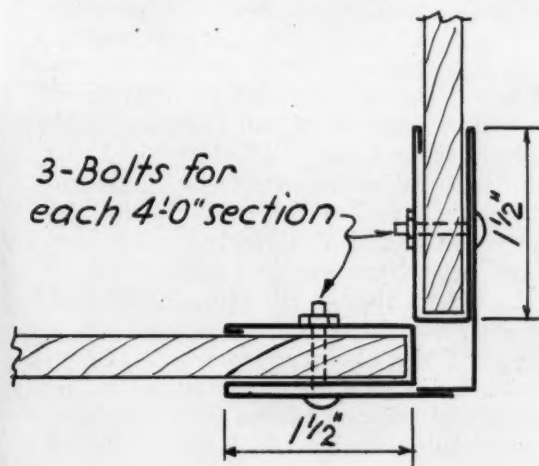
Left—Typical duct work through corridor before (above) and after (below) insulation was applied. Center—Sal-Mo supply duct section "opened up" with top wood stiffener and top insulation applied. Typical all-metal branch, center, below. Right—Sal-Mo riser insulated and Sal-Mo board elbow with "Ducturn." These large sections were built in Sunbeam's Chicago shop.

black iron. Also, the duct work in the two administrative buildings is galvanized iron because the project demanded these buildings heated before any deliveries could be made on Sal-Mo. The result is that less than 10 per cent of the straight runs of duct are metal.

Another unexpected problem encountered by Sunbeam was the unusually high cost of job administration—all of which had to be taken into overhead. For instance, there was hardly a week

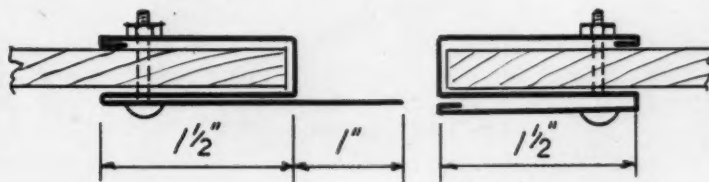
when two or three men from the Chicago office did not have to be on the job to take care of demands by the architects, engineers, project managers, materials suppliers. Or to completely revise erection (and therefore delivery) schedules because someone changed his mind on what building should go up first. The long-distance telephone bill by itself, some weeks, looked like a slice of the national debt.

There was also difficulty in getting erection procedure organized. Sunbeam's plan was to break up the mechanics into crews and schedule

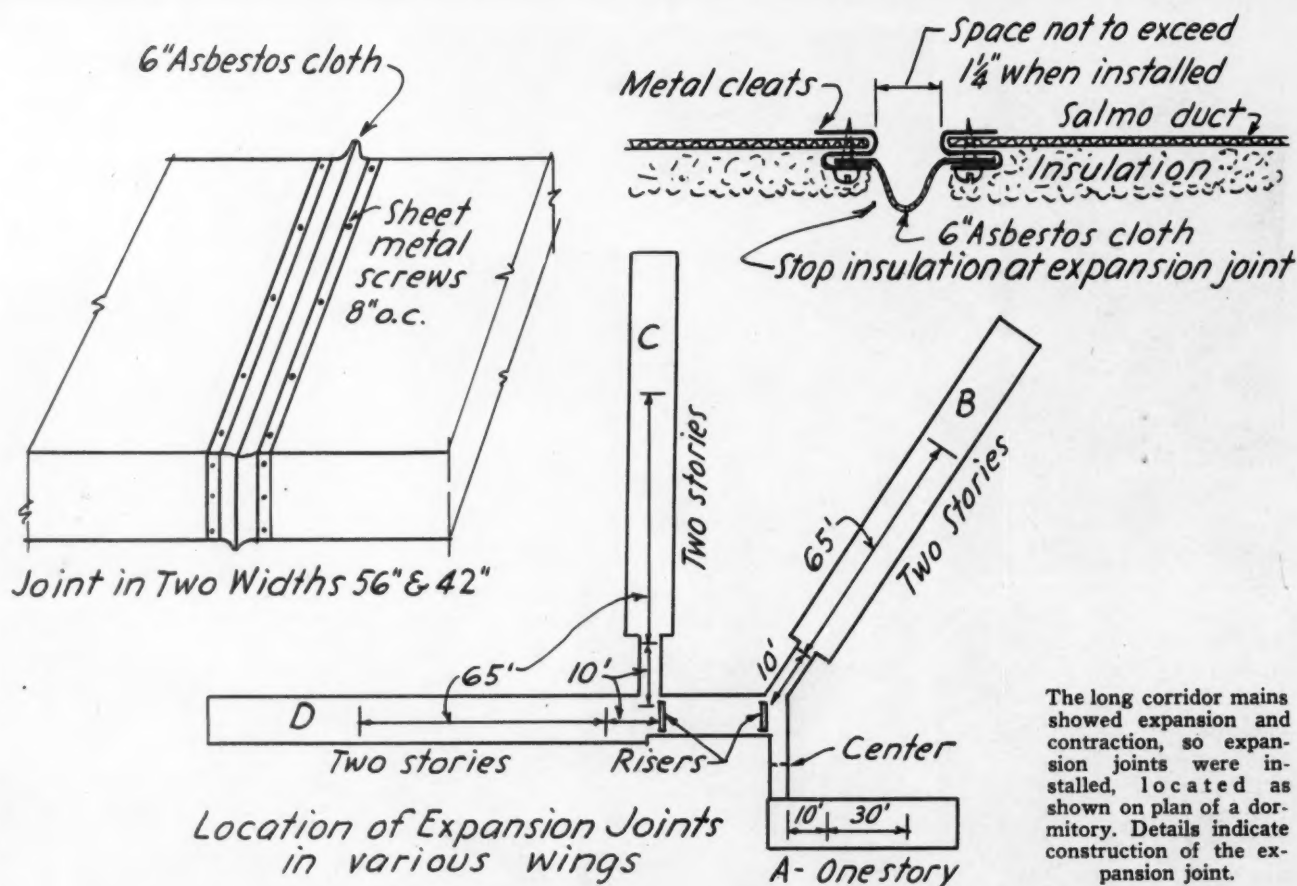


Detail showing Lateral Corner For $\frac{3}{8}$ " Millboard

This two-piece metal section connector (right) permitted metal to be applied to each section end or horizontal panel edge (left) on the floor and metal slipped into metal in erection. This was much quicker than in trying to slip "board" into metal in the air.



Male cleat Female cleat
Detail showing S-Cleat Connection For $\frac{3}{8}$ " Millboard



The long corridor mains showed expansion and contraction, so expansion joints were installed, located as shown on plan of a dormitory. Details indicate construction of the expansion joint.

erection so that each crew could progress without interruption and schedule shop production accordingly, but during the early part of the work this procedure was constantly disrupted to meet the demands of officials who suddenly wanted work stopped on one building and concentrated on another, or some special job had to be started without regard to what this did to schedules. Only when the job was entering its final stages was Sunbeam able to get its planned schedule into operation. All these disruptions increased the overhead cost of the work and also made it necessary to shift schedules clear back to Chicago and to the materials suppliers.

Schedule of Equipment

As described, the duct work, except breechings and ducts in the heater room, were specified non-metallic, so Sunbeam, after consideration, entered into a contract with the Sall Mountain Company for duct work wider than, and different from, the standard collapsible ducts Sall Mountain manufactures. Main corridor ducts are 56 inches wide, for example, and reductions resulted in mains still off sized.

These ducts are insulated with one-inch Zero Cell, which was applied by a sub-contractor to Sunbeam, as described later. The furnaces are hand fired, coal burning, horizontal, cast iron heaters made by Floral City Company. These heaters were placed two in a dormitory; one furnace rated 765,000 Btu and the second 820,000 Btu. Furnaces in Community buildings are 1,410,000 Btu.

The fans (Air Controls, Inc.) are 25-inch 3 HP,

1-inch SP., 9,500 cfm for each dormitory furnace; two 25-inch, 2 HP., 1 1/8-inch SP., 16,000 cfm for each community building furnace; 18-inch, 1 HP, 1/2-inch SP., 7,300 cfm in the administrative buildings.

Registers in dormitories are No. 256 directional flow, multi-louvre metal by United States Register Company; in community and administrative buildings Masonite, plain square openings, with valve registers furnished by Standard Stamping & Perforating Company.

Minneapolis-Honeywell furnished all control apparatus for a complex zone-control system, described later.

Construction Program

Sunbeam decided, in view of the materials used, to fabricate in the Chicago shop all metal connectors used to join the sections of Sal-Mo duct together. A detail shows the connector developed. The furnace breechings of 12 and 14-gauge black iron were sub-let to a Detroit boiler plant for fabrication. Installation was made by Sunbeam. The basement duct work which connects the plenum to the risers was also fabricated in Chicago and delivered in sections knocked down.

Where the risers change direction to 56-inch wide main corridor ducts, the very wide elbow shown in one of the photographs was made up complete with Tuttle & Bailey "Ducturns" in the Chicago shop and shipped to the job. The hundreds of metal stub branches which connect register to main were made up complete in Chicago. So were all access doors and expansion joints.

The all-metal ducts in the administrative build-

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Closeup of expansion joint and access door.

ings were also fabricated in Chicago and shipped complete or knocked down.

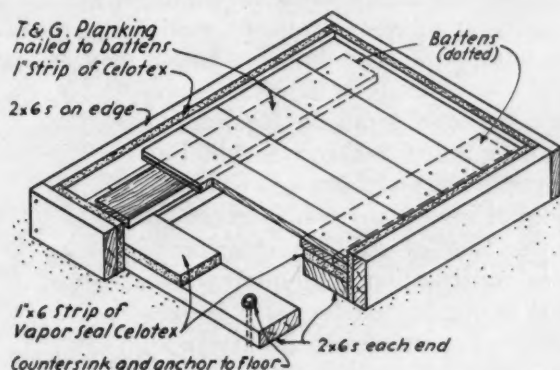
Originally, the specifications called for brick set furnaces, but a brick casing required T-bars to hold up the top and T-bars could not be had. But Floral City Company had galvanized iron casings already fabricated and the amount of metal in a galvanized iron casing was not more than the weight of the T-bars, so the metal casings were approved.

The ducts are supported by doubled flat hangers nailed to the joist and twisted to metal screw to the sides of the duct and turn under the bottom as shown in the photographs. All these hangers were made up in Chicago and punched for the screws.

The ducts which run through the corridors are of uniform depth, but the width was reduced as the duct runs out to keep the velocities up. The original plan called for a uniform depth and width plenum, but Sunbeam suggested reduced widths so that heat to the rooms at the end of the long runs was more assured. Several photographs show these reductions in duct width. A transition piece was made by opening up a duct section and cutting it into four pieces. Then the top and bottom pieces were tapered and the sides were fastened to the top and bottom with Sheetlock self-fastening strip.

Duct Insulation

An important part of the work consisted of insulating the risers, mains and branches. This



BLOWER AND MOTOR BASE DETAIL

part of the work was sub-contracted to an insulating company. This company had generally about 18 men in a building where duct work was being erected and their procedure was to insulate the top of the duct with the section on the floor. Sunbeam at the same time nailed a 2 by 2-inch wood stiffening strip across the width of the top as shown in one photograph.

Then the duct section was put in place by Sunbeam and the insulators applied the insulation to the sides, bottom and branches. Finally, wood strips were placed across the corridor, under the insulated duct, and to these strips the plywood ceiling was nailed. Sometimes these nailing strips were in place before insulation—insulation was then pasted on and shoved under the strip.

For actual duct erection, Sunbeam found four-men groups most productive. Two men opened up the duct section from the carton and placed the metal connectors around each end (see detail). They put on the top wood stiffener. They connected on all fittings such as register stubs, access doors, etc. Another two-man crew did the actual erection from low scaffolds. The type of double, slip-in connector made this erection procedure easy, since metal bound the end of each duct section. All metal on one end and naked board to be fitted in probably would have slowed up erection considerably.

Expansion Joints

Originally, there was no provision made for expansion joints in the corridor mains, but the first duct erected showed about 3 inches of contraction in the main. This was compensated by placing in each main two expansion joints of the type shown in the detail. This special metal and asbestos cloth joint was developed by Sunbeam. On erection $\frac{1}{4}$ inch was left open; at the maximum contraction, there is about $1\frac{1}{2}$ inches free space between duct ends.

To erect this joint, two sections were placed end to end on the floor and the joint applied with



The furnace blowers and motors were mounted on the special wood and Celotex base shown at the left. No critical fasteners or metal required.

screws as shown and then the two sections were erected in place as a unit.

Cold Air Plenums

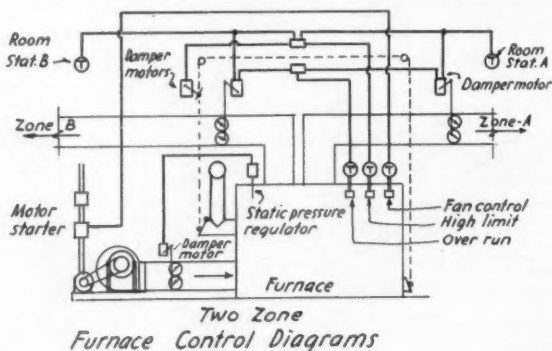
The fans and motors are placed on a special base constructed as shown in a sketch. This base successfully eliminated all fan noise and vibration and required no critical metal.

The fan takes its air from a return air plenum having brick walls as shown in a photograph and a top formed of 2 by 6's covered across the bottom with plaster board and across the top two layers of plaster board with joints crossing one another in the two layers. This construction eliminated all use of metal.

The Control System

Perhaps one of the most interesting features of this dormitory heating plant is the control system whereby temperatures are maintained uniformly in the extended wings. The method of control was developed especially by Snyder & McLean in collaboration with Minneapolis-Honeywell and is described by them as follows:

The Dormitory Control System consists of six zones: each zone has a zone damper operated by



This is the wiring diagram of a two-zone layout typical of the six zones in a dormitory. Three zones are on each furnace. Text explains operation.

an M26C damper motor and controlled by a T21A thermostat located in the zone which it controls. Each damper motor is equipped with an auxiliary switch which is operated by the motor and which is wired to a panel in the furnace room. The furnace room panel connects all the zone auxiliary switches into one circuit which is wired through an LA201 combination control located in the furnace plenum, and to an M26A damper motor which is located on the front of the furnace and

which operates the furnace check and draft. The LA201 combination control has a series of line voltage switches which are wired to an R48C relay located near the furnace room panel, which in turn is wired to control the fan starter. Also located adjacent to the furnace room panel is a P212A static pressure regulator which is wired to an M604C motor located on the return air duct near the furnace casing and which operates a static pressure damper in the return air duct.

Sequence of Operation

The zone thermostat is set for the desired temperature and opens the zone damper whenever additional heat is required to maintain the temperature at the thermostat setting. When any zone damper is open, a circuit is made by the auxiliary switch on the zone damper motor which goes through the furnace room panel, and on through the LA201 combination control to the M26A motor at the front of the furnace, causing it to open the draft and close the check.

The damper regulator motor at the front of the furnace will hold the draft open and the check closed until ALL zone thermostats are satisfied or until an excessive temperature is generated in the furnace plenum.

Should the furnace plenum temperature become excessive at any time, the LA201 combination control will operate the R48C relay, which in turn will switch the low voltage circuit to the relief zone, causing the relief zone dampers to open, and at the same time the low voltage circuit through the LA201 combination control will be switched so as to cause the furnace draft to close and the check draft to open. This condition will prevail as long as plenum temperature remains excessive.

After the plenum has been cooled to within the limits set on the LA201 combination control, the zone thermostats will again take over control of the furnace draft regulator motor. Should the plenum temperature at any time become too low for proper heating, the LA201 combination control will cause the fan to stop. When proper operating temperature has been re-established in the furnace plenum, the LA201 combination control will restart the fan.

The P212A static pressure regulator constantly feels the static pressure in the main delivery duct and regulates the static damper in the fan discharge (RA duct) so as to maintain a constant velocity at all room delivery grills regardless of the number of zone dampers which may be open.

Says John B. Blandford, Jr., Administrator, National Housing Agency—"The over-all proportions of the job we have been tackling should be cited. . . . In our planning, thus far, we have undertaken to provide roughly 3,000,000 living accommodations for essential in-migrant war workers—approximately 1,700,000 through intensified use of existing structures and 1,300,000 through new building. In new construction nearly half were completed at the end of 1942, slightly less than one quarter were under construction and a little more than one-quarter remained to be started. The completion of this program calls for a substantial volume of activity in 1943."

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Next Winter's Fuel Oil Rationing Program

ATENTATIVE program for next winter's fuel oil rationing program has just been announced by OPA.

The new program, continuing essential features of the rationing method used during the past winter, will:

1. Give householders coupons by mail without personal application;
2. Permit the use of approximately one-third of the next season's coupons beginning July 1 so that, if possible, tanks may be filled during the summer season;
3. Decrease no rations but increase some, notably for smaller homes; and
4. Greatly simplify the paper work and delivery problems of fuel oil dealers and primary suppliers.

Rationing will apply to the same 30 East Coast and Middle Western states and to Washington, Oregon and western Idaho, where fuel oil was rationed during the past winter. There is no intention to extend oil rationing to additional areas. On the other hand, there is no indication that there will be adequate transportation facilities to permit the dropping of fuel oil rationing next winter in the 33 states.

Coupons Sent By Mail

Beginning late May or early June, each householder, as well as apartment houses, hotels, and all other users of heating oil, will receive from his local rationing board a renewal application form. This form must be returned at once so that boards can process and mail rations during June, the month set aside in board activities.

If the applicant reports he will need less oil he will be asked to state how much less and this amount will be deducted from last season's ration.

The only other information the simple reapplication requests is the name and address of the consumer, the type of oil he uses, and the name and address of his supplier or dealer. This form is mailed back to the board, which processes it and mails out the new ration.

The amount of oil consumers have left over from this winter will not be deducted from their new ration and coupons for the current period, those numbered "5" will remain valid for purchases through September 30.

Consumers who use oil for processing, agricultural purposes, cooking and lighting and other non-heating purposes will continue to receive their rations on a quarterly or semi-annual basis and will not be asked to fill out the heating ration renewal form, it was stated.

Users Who Have Moved

Householders or other consumers who have moved since receiving their 1942-43 ration will be required to fill out an application for a new ration, rather than a renewal, since a change of address requires the computing of a new basic ration, it was pointed out. This form will be a simplified version of Form 1100 used last fall when householders applied for their original rations.

In instances where the applicant may be entitled to an additional allotment, he will be asked to fill out the renewal form and present his case for an upward adjustment next fall. Thus, for example, a householder

who is entitled to an extra ration because of the addition to the household of a child under four will receive his basic ration this summer and his extra next October, or thereabouts.

More Oil for Small Houses

Need for larger rations for many small homes, was demonstrated by a special OPA analysis of more than 30,000 individual rations.

This showed that the floor-area method for setting reasonable limits on rations based on a percentage curtailment has resulted in disproportionately large cuts on the average for small houses. As a result, the new program calls for an upward adjustment in the rations of the more modest-sized homes heated by either furnaces or oil stoves.

This adjustment will cover homes using central furnaces and having a floor area of 600 square feet or less in the northernmost states (zone A), 800 square feet or less in the next tier (zone B), 900 square feet in zone C and 1,000 square feet in zone D, which includes the southernmost states under rationing. A similar type of upward adjustment will be made for dwellings heated by oil stoves, with the exception that the dividing line will be lower. That is, adjustments for oil stoves will be made for house of 450 square feet or less in zone A, and of 550 square feet or less in zones B, C, and D, where oil stoves are used.

The amount of the increase will vary with the size of the house and its location. The householder living in Maine, for example, who heats by a central furnace, and whose essential living and sleeping space amounts to 400 square feet will receive an increase of about 26 per cent in his basic ration. The increases will be granted to all householders who are affected by the adjustment, with the exception of those who ask for less than they received last year.

Large House Changes

In addition, the basic rations of the very large homes will be raised somewhat by increasing the maximum amount of space—the so-called "area ceiling"—which may be heated. This has been accomplished by increasing from 2,000 square feet to 3,000 square feet the maximum area which a single person is permitted to heat. The amount of floor space area which is added for each additional person occupying a house will remain unchanged, namely 600 square feet for the second person plus 300 square feet for each additional occupant.

Because the industry normally fills consumer tanks in the Northwest during the spring and early summer, householders in Washington, Oregon and western Idaho will be issued between 40 and 45 per cent of their total next year's ration now. Present plans call for the issuance of the remainder of the ration in this area next fall, rather than in June and July.

The "heating period" system will be continued in a modified form. Rations will be allotted on the basis of five periods, but there will be more generous "overlap" of the validity dates of coupons, with each period's coupons remaining valid through the following period. Thus, first period coupons—those numbered "1"—will remain good throughout period two, those

(Continued on page 84)

Pattern Development for Air Conditioning Fittings*

By William Neubecker

Head Instructor

Sheet Metal Department, New York Trade School

Angular Boot-Rectangle to Round

IN Fig. 54 is shown the side, front and plan views of an angular boot rectangle to round. A shows the side elevation of the boot with a curved elbow connection at B whose throat and heel is struck from the center point C. This curved elbow B is connected to the riser C at a and to the boot B at b using the regulation drive cleats.

D shows the front elevation in which the diameter of the round duct is shown. E in plan indicates the dimension of the riser and F the section or diameter of the round duct which is similar to D.

The method of computing the diameter of the round duct D in front elevation so as to have an area similar to the rectangular riser shown by E in plan, is similar to the problem on areas given in connection with the development presented in the October, 1941, issue of AMERICAN ARTISAN.

The boot shown by A in Fig. 54 will be solved by a simplified rule in triangulation in which no plan or front view is required, only a side elevation and the *half sections* at either end of the boot. This method saves time, is geometrically accurate and is developed as follows:

Let A-1-7-D in Fig. 55 represent the side elevation of the boot to be developed. Let A-B-C-D represent the *one half* section of the rectangular riser or half of E in plan in Fig. 54. The *half* rectangular section A-B-C-D in Fig. 55 need not be drawn; simply memorize the length and divide by two. In other words, if the length of E in Fig. 54 was 12 inches then the half would be 6 inches; as shown by the heights of A-B and C-D in both side elevation and true lengths in Fig. 55.

On the line 1-7 in elevation draw the semi-circle which represents the one half section of the round duct. Space this semi-circle in equal divisions as shown from 1 to 7, and from these 7 points at right angles to 1-7 draw lines to intersect 1-7 at 2° - 3° - 4° - 5° and 6° . From the points 1 to 4° draw lines to the corner A and from points 4° to 7 draw lines to the corner D.

These lines then represent the bases of sections to be constructed whose altitudes will equal the heights in the semi-sections of the rectangular riser (or 6 inches if the *length* of the rectangular section was 12 inches) and the various heights of the divisions in the semi-circle.

At the upper right are shown the true lengths

of the lines in X and Y in the side elevation. To obtain the true lengths of the various lines in X in elevation, take the lengths of A-1, A- 2° , A- 3° and A- 4° and set them off in the true lengths for X as shown from A to 1, A to 2° , 3° and 4° .

From these points erect perpendicular lines making A-B, 2° -2, 3° -3 and 4° -4 equal respectively

12
to A-B (or 6 inches) — in the half rectangu-
2

lar section in elevation and 2° -2, 3° -3 and 4° -4 in the semi-circle in elevation.

Draw lines in the true lengths for X from B to 1, B to 2, to 3 and 4 which will be the true lengths of similar numbered and lettered lines in elevation. In precisely the same manner obtain the true lengths for Y in elevation, as shown by similar numbered and lettered lines in the diagram of true lengths for Y.

Having found the true lengths the pattern is now in order and is shown to the right of the elevation. Take the length of D-7 in elevation which shows its true length and set it off on any line as D-7 in the pattern. Now with a radius equal to 7-C in the true lengths for Y and using 7 in the pattern as center draw a short arc near C and intersect it by an arc struck from D as center with D-C or 6 inches in the half rectangular section in elevation as a radius. Draw lines in the pattern from 7 to C to D. Now with radii equal to C-6, C-5 and C-4 in the true lengths for Y and using C in pattern as center draw short arcs near 6, 5 and 4.

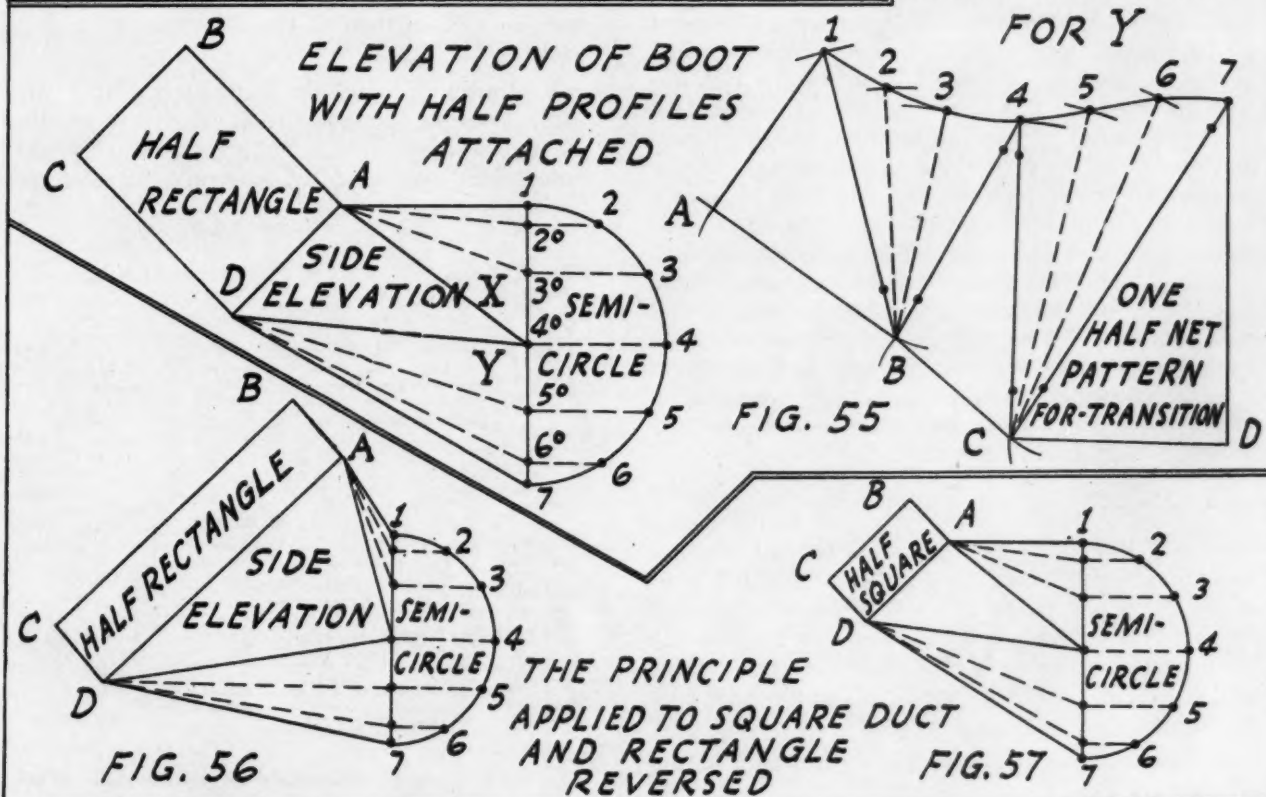
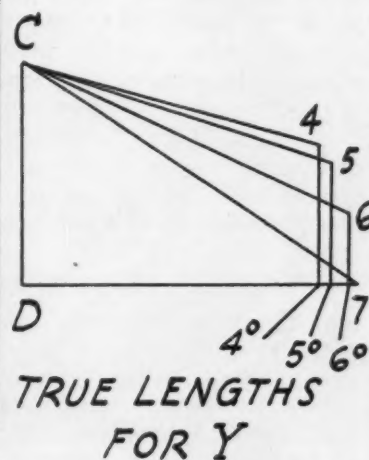
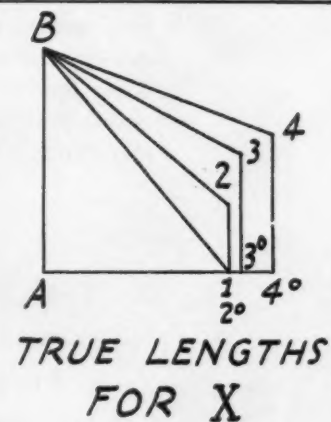
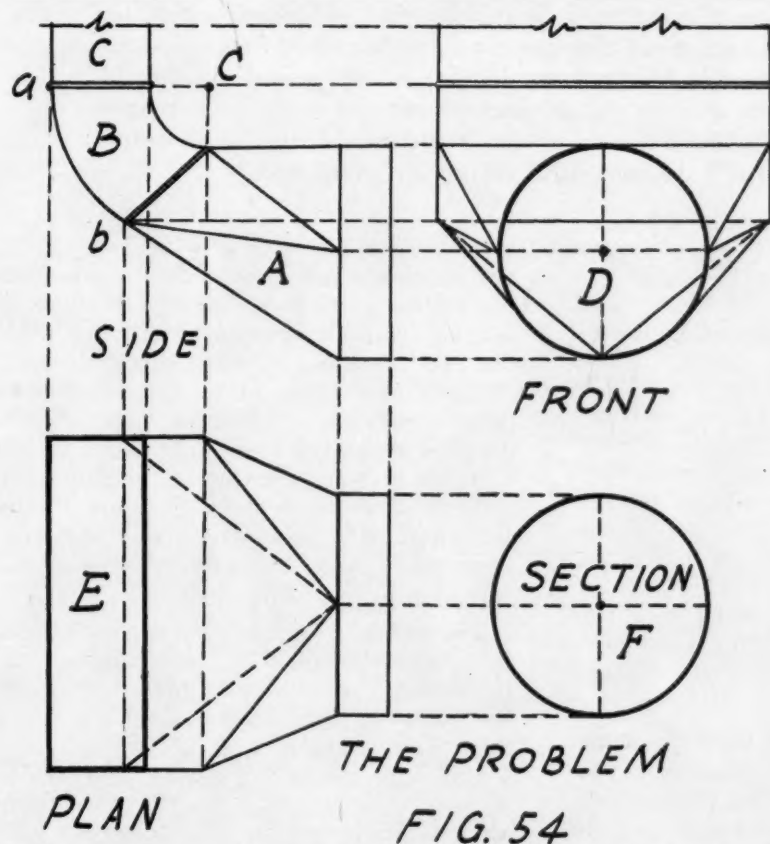
Set the dividers equal to the divisions in the semi-circle in elevation between points 7 and 4, and starting from point 7 in the pattern step to arc 6, then 5 and 4, and draw lines from these intersections to C. Now with D-A or C-B in the half rectangular section in elevation as radius and using C in pattern as center, describe a short arc near B and intersect it by an arc struck from 4 as center with radius equal to 4-B in the true lengths for X.

Draw lines in the pattern from 4 to B to C. With radii equal to B-3, B-2 and B-1 in the true lengths for X and using B in the pattern as center draw short arcs near 3, 2 and 1. Again set the dividers equal to the proper divisions between 4 and 7 in the semi-circle in elevation and start-

(Continued on page 48)

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PATTERN FOR ANGULAR BOOT ROUND TO RECTANGULAR-SIMPLIFIED METHOD



Simplified—but better—Gravity Systems

This is the fourth of several articles reprinted from University of Illinois, Engineering Experiment Station Bulletin No. 45. The new simplified gravity system proposes seven changes from the Standard Gravity Code—(1) leader pipe size in Btu, not sq. in.; (2) a unit piping system; (3) consideration of long leaders plus several elbows; (4) fewer pipe pieces; (5) furnace rated in Btu delivery at the register; (6) five good return systems; (7) 16, not 100, return air grille sizes.

APPENDIX C

Laboratory Tests on the Resistance of Gravity Boots

1. *Object.*—Previous tests on gravity fittings were made on the single-leader gravity furnace plant,* in which the fittings were an integral part of the system, and the presence of the fittings affected the system as a whole. The resistances of the fittings were, therefore, obtained indirectly. The object of the tests herein reported was to determine the pressure loss, or resistance, for typical boots used in connection with gravity systems, independent of any influence of the system itself.

2. *Description of Plant.*—Since with the same flow of air the resistance of a given fitting is the same irrespective as to whether the static pressure is positive or negative, in order to obtain data over a wide range of air velocities, and to facilitate control, the boot fittings were all tested on the outlet side of a fan under conditions of positive pressure. A line diagram of the test apparatus used is shown in Fig. 10. The quantity of air delivered by the fan was controlled by regulation of the fan speed and by adjustment of the position of the damper at the fan inlet. The air was passed by a Pitot tube inserted in a constricted section which served as a measuring station, and after being discharged against a baffle in the plenum chamber, was admitted to the test duct section. The boot fittings were tested with a wall stack connected to the outlet of the boot. Pressure measurements, made by means of a piezometer ring, were obtained at stations 1, 2 and 3 as indicated in Fig. 10.

3. *Description of Boots.*—Of the large number of available models and types of boots, those shown in Fig. 11 were selected as typical of those most commonly used in practice, and for convenience in reference they have been designated by number. In all cases the boot was used as the connection between a leader pipe 9 in. in diameter and a 3¼ in. by 12 in. stack of single-wall construction.

4. *Procedure.*—Pressure losses in a boot fitting

are composed not only of frictional effects offering resistance to flow, but also of shock losses resulting from changes in velocity or direction of the air stream. "Since shock losses involve changes in velocity, they cannot be determined from observations of static pressure alone, but must be evaluated from differences in total pressure, the latter consisting of the sum of the static pressure and the velocity pressure."* Hence, determinations of total pressures at stations 1 and 2 were made, and the pressure loss, or resistance, was obtained by difference.

The weight of air flowing through the duct system was determined at the air-measuring section by means of a Pitot tube placed in the center of the duct, and calibrated against a traverse of the duct. Determinations of air weights at stations 1 and 3 by means of velocity pressure traverses were in close agreement with those made at the air measuring section. The mean air velocities at stations 1 and 3 were calculated from the air weights determined at the air measuring section and the duct areas at stations 1 and 3.

Preliminary traverses made at station 1 with a total pressure tube showed that, within the limits of accuracy required, the total pressure could be determined from static pressure measurements

*Univ. of Ill. Eng. Exp. Sta. Bul. 300, pp. 5-6.

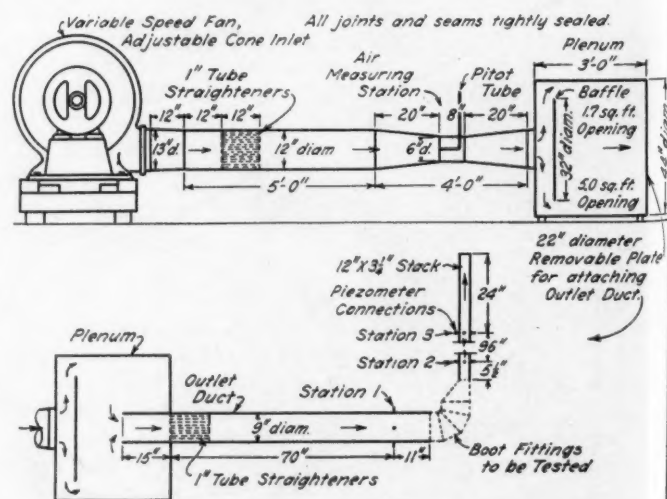


FIG. 10 DIAGRAM OF LABORATORY PLANT FOR DETERMINATION OF PRESSURE LOSSES IN BOOTS

*Univ. of Ill. Eng. Exp. Sta. Bul. 188, p. 13.

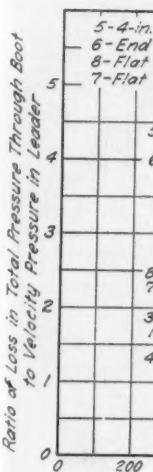
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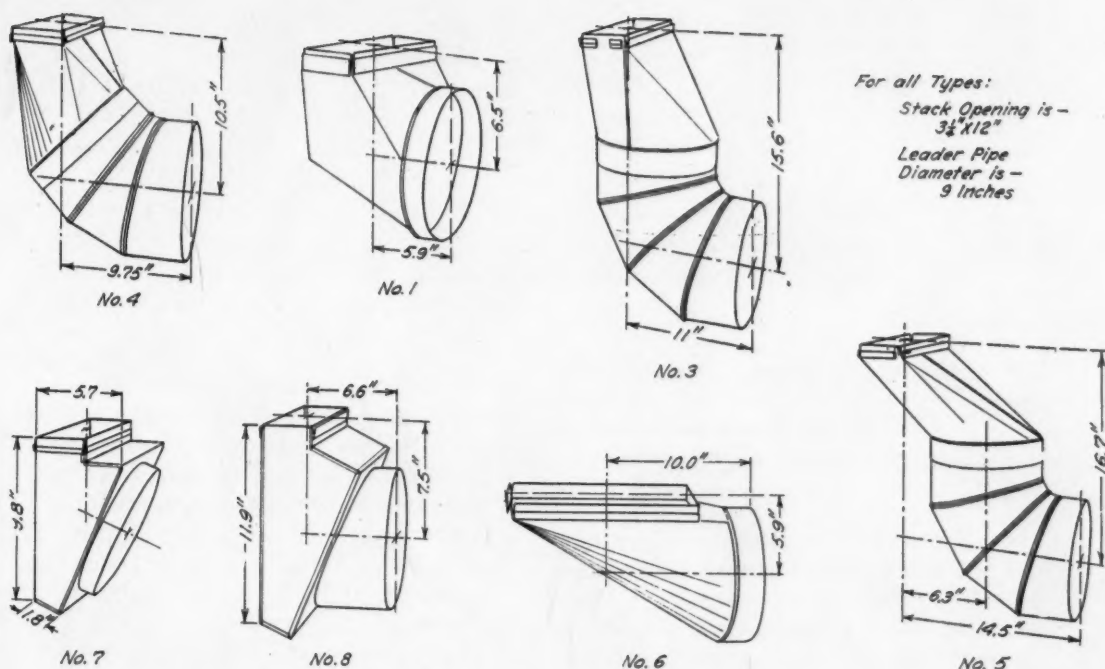


FIG. 11. TYPES OF BOOTS TESTED

made by means of a piezometer ring and calculated values of the velocity pressure corresponding to the mean velocity. That is:

$$T.P._1 = S.P._1 + V.P._1 \quad (1)$$

in which,

$T.P._1$ = Total pressure at station 1, inches of water.

$S.P._1$ = Static pressure at station 1, by piezometer ring, inches of water.

$V.P._1$ = Velocity pressure at station 1, corresponding to mean velocity, inches of water.

On the other hand, preliminary traverses at station 2 indicated that, due to the uneven flow and pressures existing in the section immediately following the boot, measurements could not be made with sufficient accuracy to prevent wide deviations in results. However, traverses made at station 3 showed that the total pressure could be ob-

tained with sufficient accuracy by measuring the static pressure with a piezometer ring and determining the velocity pressure from the mean velocity at the section. That is,

$$T.P._3 = S.P._3 + V.P._3 \quad (2)$$

in which,

$T.P._3$ = Total pressure at station 3, inches of water.

$S.P._3$ = Static pressure at station 3 by piezometer ring, inches of water.

$V.P._3$ = Velocity pressure at station 3, corresponding to mean velocity, inches of water.

Separate tests were then made to determine the loss in static pressure between stations 2 and 3. That is:

$$S.P._2 - S.P._3 =$$

pressure loss between stations 2 and 3. (3)

Since the velocity pressures at stations 2 and 3 were equal,

$$T.P._2 - T.P._3 = S.P._2 - S.P._3 \quad (4)$$

A correction curve, showing the relation between the velocity of the air in the stack and the pressure loss between stations 2 and 3, was plotted from Equation (4). At any given air velocity, the pressure loss in the boot fitting was obtained by subtracting $T.P._3$ from $T.P._1$, and then correcting this difference for the pressure loss in the connecting stack as read from the correction curve. For each boot fitting, pressure measurements were made over a wide range of air velocities.

5. Results.—The pressure losses, as measured in inches of water, were expressed as the ratio of loss in total pressure through boot to velocity

pressure in leader or $\left(\frac{T.P._1 - T.P._2}{V.P._1} \right)$. This

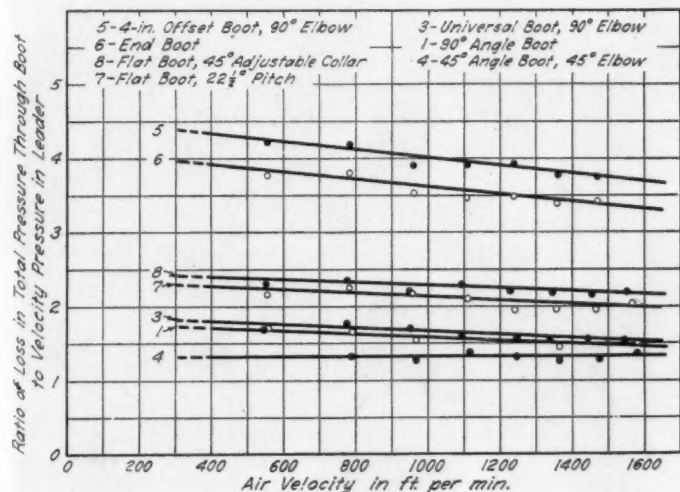


FIG. 12. RESISTANCE OF BOOT FITTINGS

TABLE 18
PRESSURE LOSS OF BOOT FITTINGS

Boot No.	Type	Resistance of Boot Fitting		
		Ratio to Velocity Pressure*	Equivalent Diameters of Leader Pipe†	Equivalent Number of 90-Deg. Elbows‡
4	45-deg. angle boot and 45-deg. elbow.....	1.31	51	1.17
1	90-deg. angle boot.....	1.73	68	1.56
3	Universal boot and 90-deg. elbow.....	1.83	72	1.65
7	Flat boot with 22½-deg. pitch.....	2.30	90	2.07
8	Flat boot with 45-deg. adjust. collar.....	2.42	95	2.18
6	End boot.....	3.98	156	3.58
5	4-in. offset boot.....	4.40	173	3.98

*Based on Fig. 12, at velocity of 300 ft. per min.

†Based on pressure loss in duct from American Society of Heating and Ventilating Engineer's Guide for 1942, p. 612.

‡Based on pressure loss in elbows from "Pressure Loss Caused by Elbows in 8-inch Round Ventilating Duct" by M. C. Stuart, C. F. Warner, and W. C. Roberts; Heating, Piping, and Air Conditioning, October, 1941, pp. 642-648.

ratio is general in that it is applicable to any size of boot, while the loss in terms of inches of water is applicable only to the size of boot tested. The pressure loss ratio over a wide range of air velocities is shown in Fig. 12 for the various boots tested. It may be observed that the curves fall into two distinct groups, with the curves for the group consisting of Boots Nos. 5 and 6 lying considerably higher than for those in the group containing Boots Nos. 1, 3, 4, 7, and 8. It should be further noted that Boots Nos. 3 and 8 correspond with those used in the original single-leader gravity furnace tests, on which the tables in Appendix A were based. (April issue.)

A velocity of 300 ft. per min. was selected as representative of velocities existing in gravity furnace plants and the ratios of total pressure loss to velocity pressure loss in the leader pipe, as read from the curves in Fig. 12 at this velocity, are shown in Table 18. Corresponding values, expressed in terms of equivalent diameters of leader pipe and equivalent numbers of 90-degree

elbows, are also shown in this table. It is evident from Table 18 that the pressure loss in the boots tested was equivalent to that occurring in from 51 to 173 diameters, or from 1.17 to 3.98 ninety-degree elbows.

6. *Application of Results.*—The derivation of Tables 13 and 14 (April issue) were based on test results obtained with conventional unit runs of 8 ft. containing either a universal boot and 90-degree elbow, No. 3, or a flat boot, No. 8. These two boots were regarded as an elbow and so used in Tables 9, 13 and 14. Thus, the effects of these two boots were included in the test results and were also taken into account in the tables. If boots having materially greater resistances than those given by Nos. 3 and 8 are to be installed, then an additional correction should be employed in the application of Tables 13 and 14. The simplest way to make such a correction is by the inclusion of the proper number of 90-degree elbows.

It may be noted from Table 18 that Boots Nos. 3 and 8 were equivalent to approximately two elbows. Hence, no correction would be necessary for any boot combinations in which the pressure loss did not appreciably exceed that due to two equivalent 90-degree elbows. This is true of Boots Nos. 1, 4 and 7, as well as of Nos. 3 and 8. On the other hand, the resistances of Boots Nos. 5 and 6 were equivalent to those of 3.98 and 3.58 equivalent 90-degree elbows, respectively. That is, they were equivalent to approximately two elbows in addition to the basic resistances used in the derivation of Tables Nos. 13 and 14. Hence, in the application of the tables, two additional elbows should be included if the installation is to contain boots of the types represented by Boots Nos. 5 and 6.

[To be concluded]

Neubecker-Angular Boot, Rectangle to Round

(Continued from page 44)

ing from 4 in the pattern step to arcs 3, 2 and 1. From these points draw lines to A. With 1-A in elevation as radius (its true length) and 1 in pattern as center draw an arc near A and intersect it by an arc struck from B as center with B-A in the half rectangular section (or 6 inches) in elevation as radius. Draw lines from 1 to A to B in the pattern and trace the curved outline from 1 to 7 to complete the one half net pattern for the boot.

The dots shown on the solid lines on the pattern shape, indicate where very slight bends are made. That portion of the cone shape in the pattern between 1 and 4 and 4 to 7 should not be

"kinked" up in the brake so as to show bends; but should be rounded so as to appear like sections of cones.

Sometimes the rectangular riser E in Fig. 54 runs up in a reversed position as shown in Fig. 56 where the half rectangular section is placed with the wide side on A-D and one half of the narrow side at A-B and C-D. If the round end of the boot is to connect to a square duct, then simply take one half of the square section and set it in a position shown in Fig. 57. No matter in what positions the square or rectangular section are placed, this simplified method holds good and gives true geometrical developments.

Note that the reference letters and numbers in both Figs. 56 and 57 have been made similar to those in Fig. 55. This allows the text given in connection with Fig. 55 to be applied to both Figs. 56 and 57. Edges must be allowed on all pattern shapes and collars, for double seaming and riveting.

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UNITED STATES STEEL



Final touchup, prior to painting, so important in keeping down rejects, files away any rough edges; sees that the cover fits uniformly all around the box; checks all spot welds on hardware. Syncromatic has few rejects, under this system.

Outboard Motor Spare Parts Boxes

THE Syncromatic Corporation, Milwaukee, whose peace-time business is manufacture of warm air furnaces, has found among local Milwaukee prime war product manufacturers a number of sheet metal items which can be produced with the firm's equipment and in sufficient volume

to keep one full time day shift and a partial night shift busy.

Persistent search among prime contractors has disclosed numerous products. Many of these are small lot, one-time orders which the plant can work into the steadier and larger volume orders in process. Some of the products unearthed require only one or two operations on one machine but in such quantity that a special set-up on one machine is warranted even though taking the order takes that machine out of other production.

For example, a small punch press was rigged with a special die to form small flat strips into a simple bracket, but the order was attractive because there are limitless thousands of these brackets to form. Result, the press works day and night on the brackets with a woman being used because a man operator could not be spared or found.

Some of the products brought into the plant for consideration are quite large and when brought in require some experimentation before the final assembly is approved. A case in point is a breeches buoy line holder which consists of a double inner container to hold cannisters of light line with the heavy line coiled around the inner container inside an angle iron and galvanized iron housing. The question was proper design to conserve materials and methods which would not fill up all floor space with the large units.

Spare Parts Box

The photographs in this report show steps in the production of a spare parts box for outboard motors. When the photographs were taken, production had reached 150 boxes per 24-hour day



Spot welds in hardware are touched up with a carborundum cone in a hand grinder. This tool gets down into spots or into corners and does in a jiffy what filing takes minutes to do.



Left are two views of the corner welding positioner developed by Syncromatic to speed up gas welding of cover corners. Ten covers are locked in the positioner and one row of corners is welded. Then the unit is revolved, bringing up to down-hand position another row of corners. This positioner was built from material found in the shop.

and it was expected that production would reach 250 boxes a day if labor could be found or trained.

To solve the labor problem, Syncromatic has tried women operators in welding and machine operation. Women welders tried were both good and bad; they required some shifting in shop procedure; when good they were very good, but when bad they were not worth the time and trouble to train. On certain light machine operations some women with past experience have proved capable; untrained women are difficult to train in a small plant which does not have a training school or a large foreman personnel.

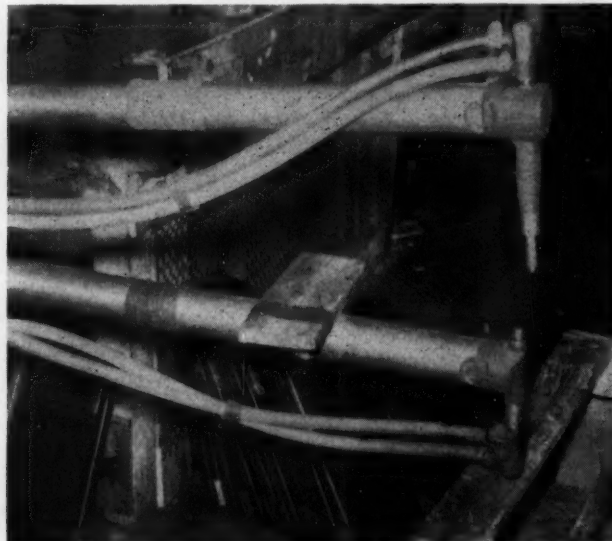
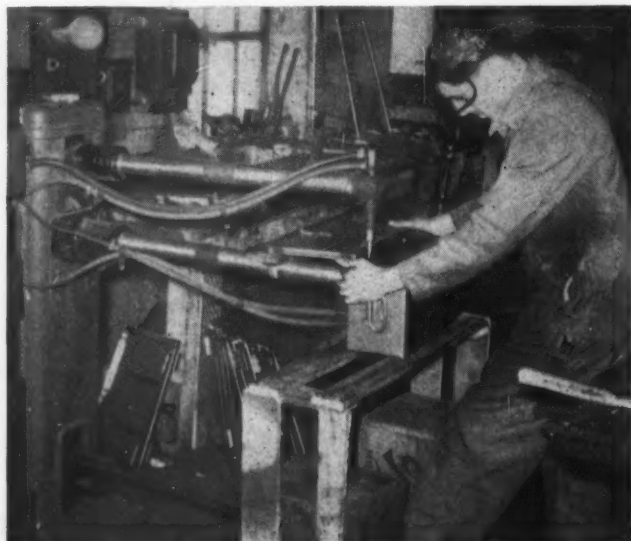
This particular spare parts box is made in two sizes, 18 by 9 by 6 or 18 by 12 by 6 inches. The material is 16 gauge cold rolled No. 47-S-10 formula.

The original specification called for a one-piece

box, but to cut the bottom, sides and end from one piece required a sheet 21 by 30 inches without any hemmed edges, thereby wasting four corner pieces each 6 by 6 inches or a total of 144 square inches in the 630 square inch sheet. This is about 23 per cent of the sheet.

Syncromatic suggested that the bottom and sides be formed from one sheet 21 by 18 inches, sheets being furnished by the supplier cut to size and two separate end pieces, each 6 by 6 inches, with three flanged edges so that the end could be inset in the box and spot welded. With the ends also furnished cut to size, all waste was eliminated at an added cost of a fraction of a cent per pound for cut-to-size stock.

The top is flanged to fit down over the box and is made from one piece of metal bought cut to size. Since all sheets for the box are bought to size,



Hardware is spot welded on the cover and box using a simple cut-out template to hold the pieces in position. The electrode holder arms are taped as shown to prevent short circuiting. The block prevents the cover flange from shorting and also holds the cover level.

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AMERICAN ARTISAN
SHEET METAL SECTION

there are no shearing operations required and on the box proper the first machine operation is turning up the front and back 90 degrees. This is done in the press brake. Each end piece is flanged on three edges to permit the ends to be inset and spot-welded along the flanges. Notch-outs are cut to admit the flanges in the ends.

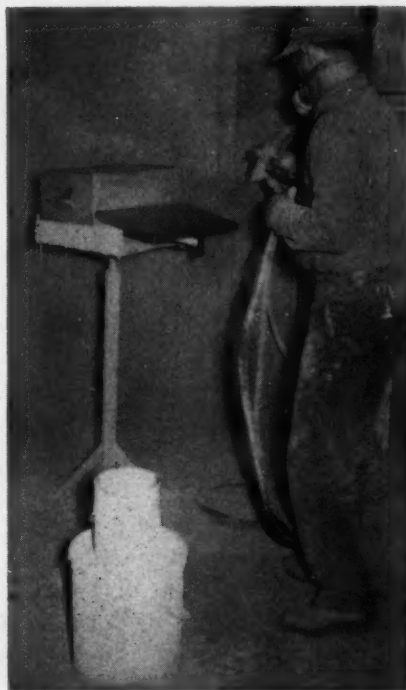
Cover Construction

The one-piece cover requires notchout at the corners and flanges turned on four edges. Flanging is done in the press brake or can be done on the hand brake. The four corners must then be welded, and since the specifications require a snug

the hinges and hasp during spot welding. Another template locates the handles for welding. A third template puts the clips in the right place for welding. All these are the usual home-made, simple cut-outs in which the hardware is inserted in the cut-out. Tolerance is not too rigid, but each piece of hardware must be in proper location and the hasp must fit its counterpart. About the only trouble encountered has been a few faulty spot welds and a few pieces of hardware out of place. All these have been corrected without wasting the box.

The box is of such a shape and size that shorting in the spot welder could occur without the

The inside of the box is spray painted first. The right photo shows the finish coat being applied. Then the box is turned upside down and the outside sprayed. Left photo shows prime coat. The "pitchfork" is used to place the boxes in the air drying racks.



fit, distortion must be avoided and exact 90-degree corners must be produced.

This problem was overcome by building the special positioner shown in two photographs. The positioner is built to hold 10 covers for welding. Each solid end has a welded-on trunnion as shown, and the two solid ends are boxed with five stationary, welded on bars which have clips along their length to form racks for the 10 covers.

One of the long sides has no stationary bar but has a hooked-on bar which is put in place after the positioner is loaded with the 10 covers. The trunnion makes it possible to turn the positioner over and over so that each row of corners can be down-hand welded right before the operator. Ten corners are welded, then the positioner is revolved to bring up another row of corners.

Hardware

There must be spot welded to the box two end handles, two hinges, a hasp, and in the cover two spring clips. A simple cut-out template positions

tape-wrapped electrode holders and the taped-on wooden block shown in two welding photographs. This is somewhat temporary but has proved successful.

Finishing

Three men are used, ordinarily, as a touch-up and inspection crew. These men use a small hand grinder to touch up all spot welds and corner welds. Any roughness along the box edges is smoothed with a file. This crew also opens and closes the cover and sees that each cover fits snugly, that the hasp closes precisely and that the hinges and handles are firmly attached and in working condition. Rejects from customer inspection have been negligible.

Finally, the box must be painted Navy gray. A zinc chromate prime coat is first sprayed, requiring about 1½ minutes for each box. The prime coat is air dried for about 12 hours. The final coat is also sprayed and air dried, usually over night.

Temporary Dies and Fixtures

(For Fabricating a War Product-Marine Tank)

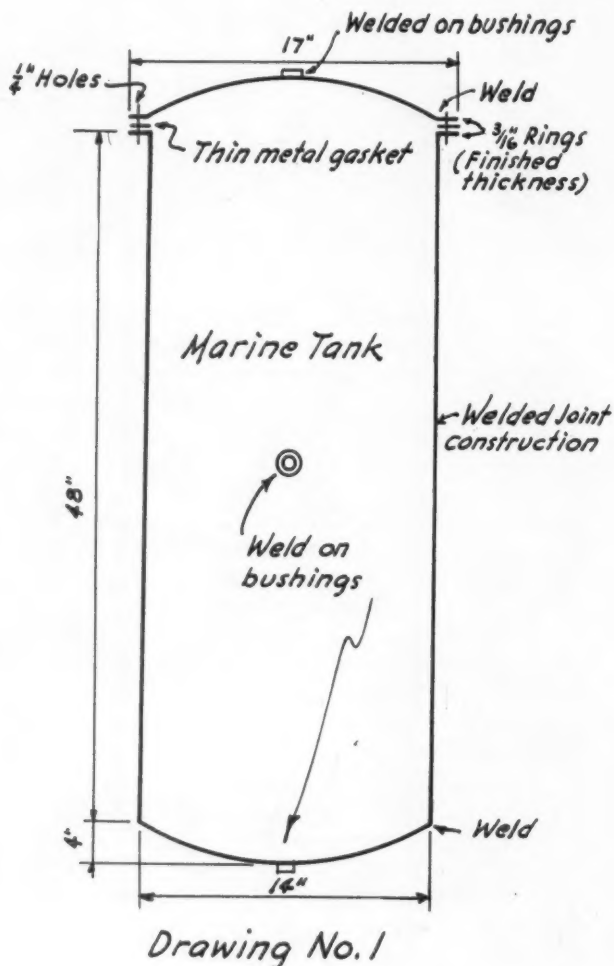
By Ernest E. Zideck
Sheet Metal Consulting Engineer

THIS tank, ordered in quantities not exceeding five hundred, is being manufactured in sheet metal shops having rollers for 11 gauge steel, a suitable press or heavy duty press brake, an arc welding outfit, the usual other equipment—and ingenuity enough to construct and use to advantage shop-made rig-ups like those illustrated here.

The tank is made of 11 gauge steel for the body and 12 gauge soft steel for the raised bottom and top. The material used is of the "pickled" kind, because the tank, after its completion in the sheet metal shop, is being plated and made rustproof. The shearing of the blanks for the tank body and for the two covers is being done, to specifications, by the supplier. The two flanges are made of

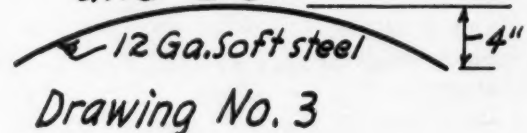
$\frac{1}{4}$ by $1\frac{1}{2}$ -inch band iron, and are drilled for $\frac{1}{4}$ -inch bolt holes spaced $1\frac{1}{2}$ inches apart. One flange is arc welded to the tank body and one to the raised lid, the flanges fitting one over the other and having corresponding bolt holes. The tank is made to withstand 200-pound pressure with only a thin metal gasket in between the bolted flanges. To assure tightness between the flanges over the gasket, the flanges, after being welded to the tank body and the cover, respectively, are leveled up by shaving off the unevenness and grinding to a smooth finish. There are four 1-inch pipe bushings welded onto the tank, one each to the top and the bottom and the other two in a corresponding position of the tank body.

Accompanying Drawing No. 1 shows the completed tank with the lid raised to show how the gasket is inserted and the lid bolted into place after the plating has been done. In Drawing No. 2 is shown the $\frac{1}{4}$ -inch thick band iron ring which,



Drawing No. 2

Raised Bottom
and Lid.



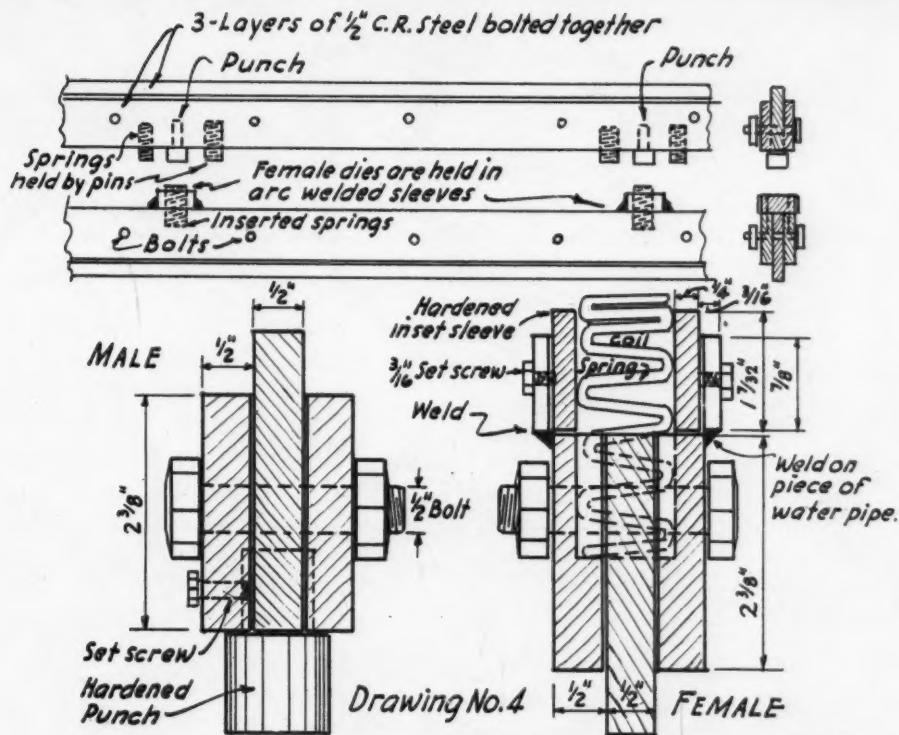
Drawing No. 3

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Die Set For Punching Holes in Tank Body Also Top & Bottom

after undergoing shaving off and finishing, is reduced to 3/16 inch thickness. The holes in the two rings are drilled simultaneously after the flanges have been leveled.

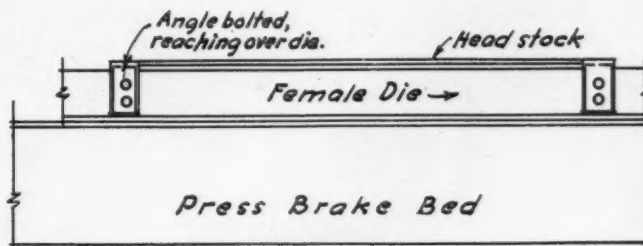
The raised bottom and lid are shown in Drawing No. 3. These two parts are of identical depth formation, have the same diameter and placement of holes and are produced by an identical set of dies. In Drawing No. 4 is shown a shop-constructed set of hole punching dies for operation in the press brake, the set being designed for punching the two holes in the tank body blank at one operation. By bolting the die set on the position brackets shown in Drawing No. 5, these same dies can be used for punching the holes, two at one time, in the bottom and the lid blanks (in flat).

In Drawing No. 6 we see a rig-up for the welding together of the tank body after it is rolled to shape in the rollers. This rig-up consists of a fairly heavy standard water pipe of a length that permits fastening one end substantially to the bench top with about 5 feet protruding over the bench. Around this pipe is secured a two-piece drum with movable arms, described in more detail as we proceed.

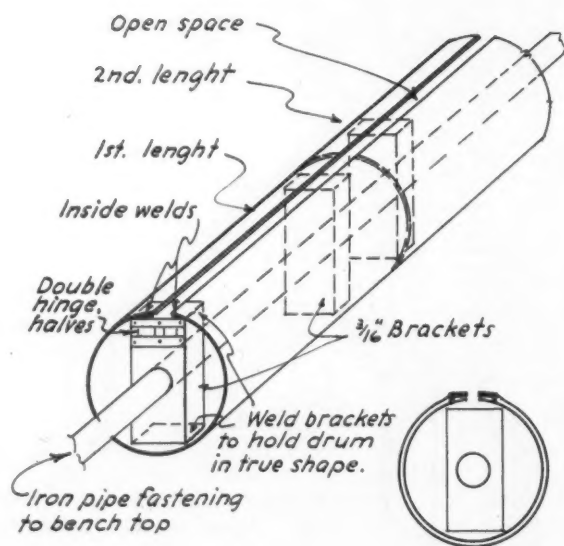
Drawing No. 7 shows a die-set to be mounted on the press brake, for fashioning the raised bottoms and lids. In Drawing No. 8 we show a shop-made, hand operated arrangement for producing the 1/4 inch thick band iron rings. Drawing No. 9 shows a shop-constructed machine for shaving-off and finishing the band iron flange-surfaces in place on the tank. And, finally, Drawing No. 10 shows a drill jig, fastening over the tank cover, by which the 1/4-inch holes in the two flanges are drilled.

Die Set for Body Holes

By a careful study of the Drawing No. 4 we see that the die-set for punching the 1-inch holes in the tank body and the lid and bottom requires only two small parts, in duplicate, which need to be of tool steel and machined. These are the punches and the sleeves, both arranged for insertion into the shop-constructed other parts in which they are held by set-screws. If we rummage through our scrap and discarded machinery we might find something just suitable for the punch and the sleeve. The coil springs in the die-set are not difficult to secure or fashion. The cold rolled steel of 1/2 inch thickness we may substitute, using same thickness of boiler plate. The fixtures holding the punches and the hardened sleeves are constructed each of three thicknesses of 1/2-inch metal, bolted together, with the respective holes for punches and springs drilled in the bolted assembly. The construction is such that the center 1/2-inch bar protruding will fit into the die-receiving part of the press brake, and the

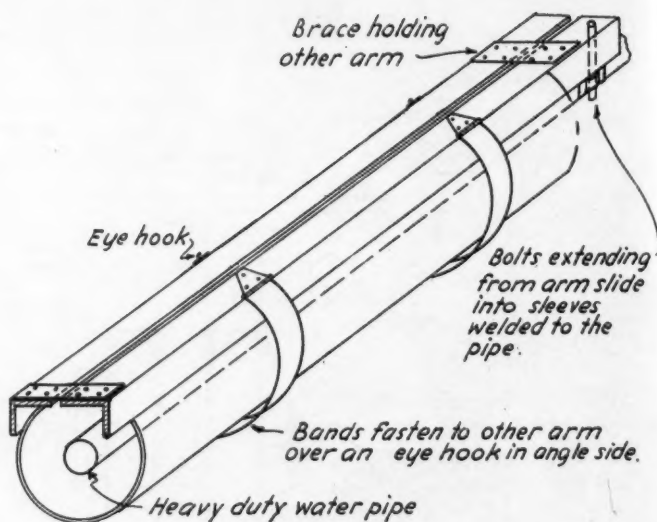


*Drawing No. 5
(Position brackets for holding Drawing No. 4
Die set for punching holes in top and
bottom heads)*



END VIEW

DRAWING NO. 6 (BODY WELDING FIXTURE)



other two pieces will rest on the die receiver, just like any other standard press brake die.

The female part of the die (the hardened sleeve in this case) is held within a welded-on piece of water pipe, threaded for set-screws. The coil spring operating within the die will discharge the punched out metal. Springs operating in descending part will press against the blank being punched and free it from the punches. Brackets shown in Drawing No. 5 are used for positioning the stock. But if we have standard gauges by which to set the stock position, we need no other gauges for the body blank. It is different with the stock for the lid and bottom. This stock is in the form of discs, and the standard gauge will not position it. That is why the above brackets are being used.

Body Welding Fixture

Returning to the quite complicated appearing rig-up shown in Drawing No. 6, we could dispense with this by using two pieces of angle iron fastened to the bench top, on which to position the tank body for welding. We could use $\frac{1}{8}$ by 2-inch rings slipped over the tank body while it is being welded. But experience has shown that, in quantity production, longitudinal seam welding is best accomplished if the welder is given a fool-proof fixture for holding the metal in just the right position, and that is why the arrangement shown in the drawing was devised.

The drum is made of two lengths, one provided with a tapered collar to slide easily into the other joint. Each of the two lengths has two inside welded brackets, holding the drum in its shape and securing the $1\frac{1}{2}$ inch space between the edges of the metal. The brackets have holes, located closer to the top or open space in the drum, so that the drum, inserted over the pipe fastened to the bench top by means of the holes on the

brackets, will by its own weight hang in the right position for welding, the joint being on top. To better secure the drum in the desired position, the bracket nearest the bench may be tack-welded to the pipe. There are two angle-iron pieces moving on hinges secured to the aforesaid bracket. These angles are arms which extend along the drum, with protruding bolts from the angles closing over the pipe as shown, to hold the braced-together arms in the desired position. There are two bands moving on hinges fastened to the one arm and locking over eye-hooks in the other arm.

With the rolled tank body (the rolling leaving about $\frac{1}{4}$ inch gap between the metal edges) inserted over the drum, the seam just above the gap in the drum and the arms lowered and bands locked, the tank body is securely held in its place ready for welding. The bands will compress the tank metal over the drum, bringing the metal edges together for arc welding. Needless to say, the rig-up must be carefully constructed, the drum must be perfectly round, and the arms and bands made to work right.

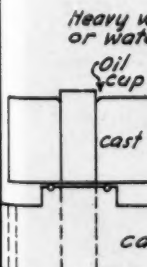
Band Iron Ring Former

We now come to the most difficult operation so far, that of forming the $\frac{1}{4}$ by $1\frac{1}{2}$ -inch band iron into rings. It has been pointed out in the introductory part to this article that the rings must be as nearly level as possible, with no hammer marks or dents in the flange surface, and the truest possible circular shape must be maintained because one ring must fit the other. The arrangement shown in Drawing No. 8 has been devised for the purpose. The parts are shown as iron castings, but if difficult to get under the present conditions, hardwood lined with cold rolled steel bands in the vital portions and with sleeves will do just as well. In fact, the smaller round block of the two will be better if lined with a steel casing or a

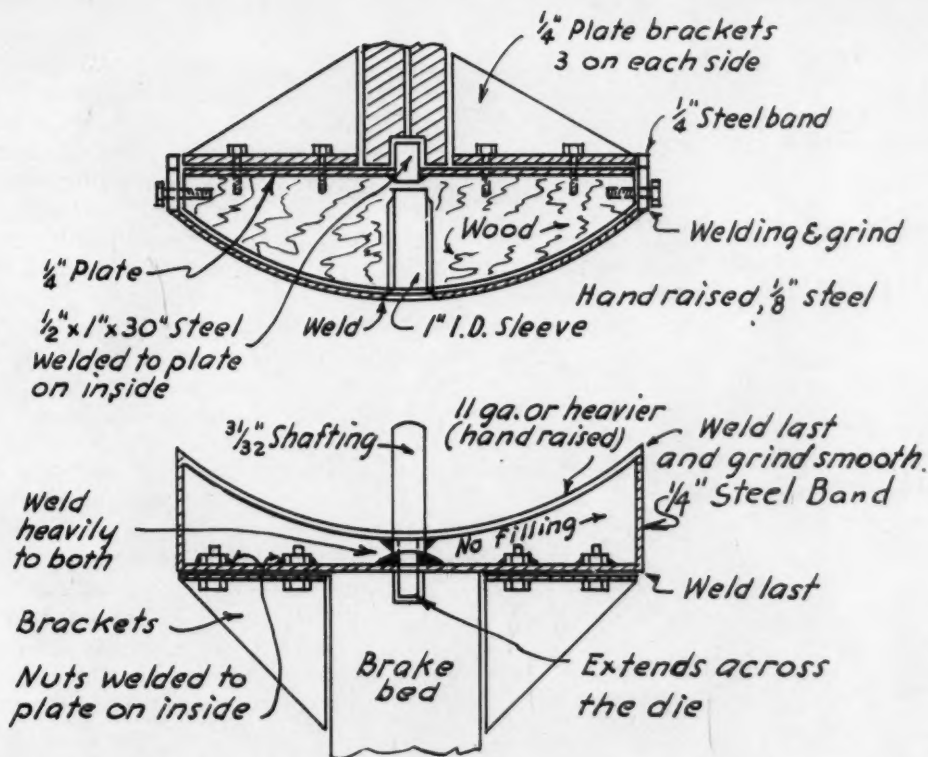
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$\frac{5}{16}$ Pin hole



Drawing No.



Drawing No. 7 (Bottom Raising Die Set)

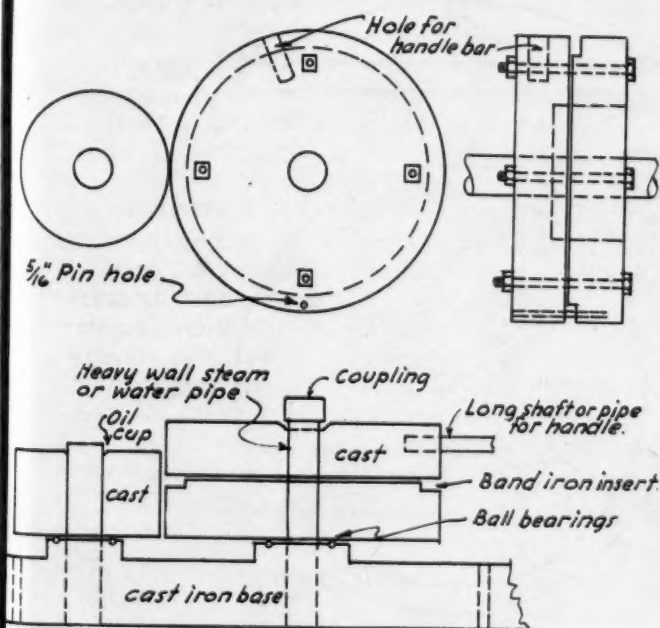
portion of it, because cast iron will show a groove after much use, caused by the band iron pressing against it. It will be found best to cut the band iron stock to length and end shape after a good tryout. A $\frac{1}{8}$ -inch gap between the ends after the ring is formed is desirable. The forming fixture is so constructed that it can be rotated several times with the band iron buried within it. It should be noted that there is a $\frac{5}{16}$ -inch pin hole provided in the large block. The band iron is punched for a $\frac{5}{16}$ -inch hole located at one end.

This end is inserted into the $\frac{17}{64}$ -inch offset in the casting and secured by a hardened pin to it.

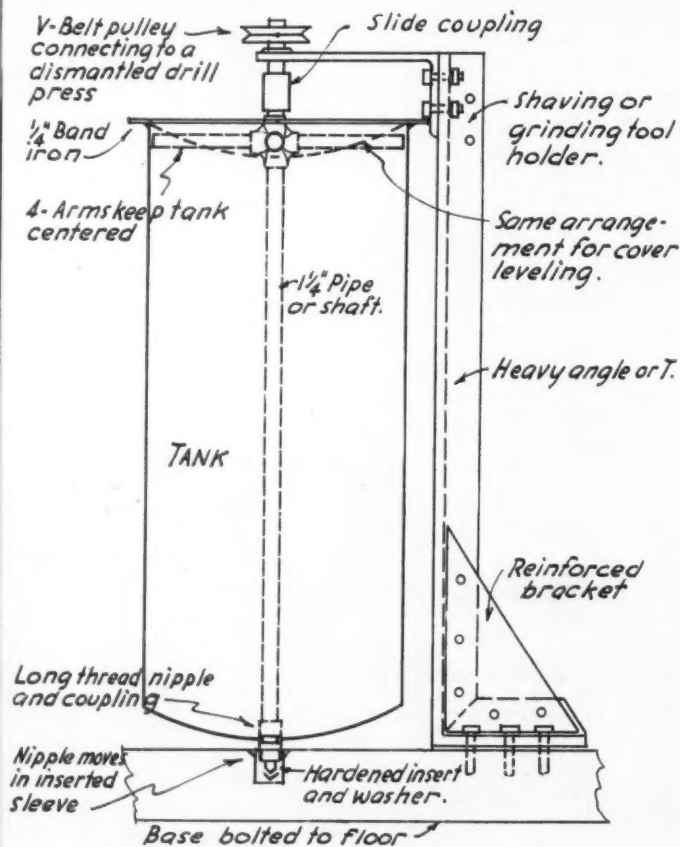
The rotation of the large block, moved by a long bar handle, brings the band iron to the smaller block which presses the band into the offset, the operation resulting in the band assuming the shape of the large block. Repeated rotation will result in the band remaining in the desired circular form. But to extract the ring from the fixture it is necessary to unthread the coupling on the pipe and lift the block off. Certainly, we could devise some means for rolling the band in the manner of wire rolling in common shop rollers. This would be that much better, provided the upper roll would lift like it does on the more up-to-date machines.

Bottom Raising Die Set

That same "better means" eventuality applies to the bottom and lid raising die-set illustrated in Drawing No. 7. If we have a suitable press and can get the die-set cast, it would be imprudent to construct the shop-made set shown in the drawing. But in absence of the right kind and size of press and if we have a heavy duty press brake, the die construction intended to be used in the press brake is the one to figure on. The drawing shows all essentials of construction. We fashion, by hand, two raised bottoms. In the male part of the die-set we must use hardwood on the inside of the steel construction. In the female part we do not need the wood. The shaft protruding from the center of the female part centers the blanks provided with the 1-inch holes. The shaft moves into the sleeve provided in the male half of the



Drawing No. 8 (Band Iron Ring Former)



Drawing No. 9 (Band Leveling Machine)

die-set. The 1/2 inch thick steel prong fastening into the press brake extends beyond the die itself, facilitating fastening and holding tight in position. The brackets shown in the drawing secure the levelness of the die in its hold and transmit to the brake's center the lateral pressure exercised in forming.

Ring Band Finishing Machine

In Drawing No. 9 we see a rig-up for abrasive finishing of the two flange surfaces which contact the thin metal gasket. In building this fixture it is necessary that the shaft or pipe terminating in the bottom bushing and extending into the base be perfectly perpendicular so as to keep the iron band to be shaved off on a constant level in rotation. In other words, the rig-up must perform like a lathe and its vertical position shown here is by no means arbitrary. A shop might have or secure a discarded lathe or other machine base which might be used to advantage in this connection. But it must be remembered that the vertical position as here shown facilitates the centering of the tank in that its weight needs no supporting, like it does in a lathe or would in a horizontal position.

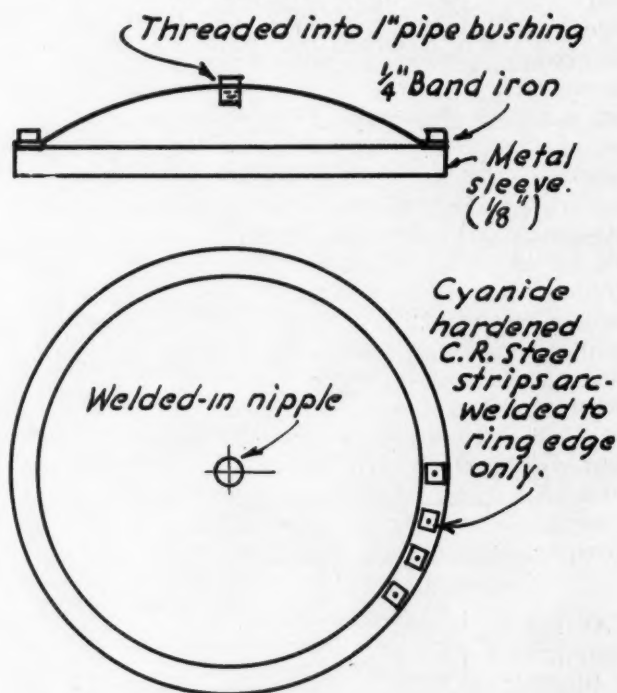
In the drawing we show a 1 1/4-inch heavy steam pipe used for tank support and rotation. By using the arrangement of four pipes as a cross at the top of the tank shown in the drawing, it is possible to thread the lateral arms in adjustment, centering the tank. The nipple at the base is a piece of shafting with a smaller diameter extension to which the pipe wrench is applied in threading in or out. This nipple is machined to

a dull point, the point cyanide hardened. The cast iron base provision receiving the nipple contains a similarly hardened insert, a washer dented to receive the hardened point of the nipple. This point and this washer bear the whole weight of the tank in its rotation. The nipple is only 2 inches long, permitting the tank being lifted out of the base by releasing the clutch engaging the shaft.

The heavy angle iron upright is bolted to the base, permitting of its adjustment in centering the shaft. The two holes marked in the upright serve for fastening to the angle iron a "bit" holder, the bit shaving off the surplus metal from the flanges. The heavy broken line shown in the drawing indicates the position of the tank cover when its flange is being processed as the cover rests upside down in the tank. In absence of a suitable bit holder, shaving off the metal to levelness and smoothness might be done by files adjusted into a holder secured to the post. A grinding disc may be used, but it must be the rotating flange contacting it, not the disc exercising the pressure.

These are minor details which become a matter of common understanding once we know that the flanges of the tank and the cover must be level and smooth to fit together and effect a tight joint. While the tank and the cover are mounted in the rig-up for rotation, we also shave off the edges of the bands to a uniform diameter to permit any cover to fit any tank as required in assembly after plating. Also, the uniform diameter and smoothness of the bands facilitates the insertion over them of the drill jig for drilling the holes in the two flanges.

This drill jig, shown in Drawing No. 10, we (Continued on page 85)



Drawing No. 10 (Drill Jig)

IN energy d year. T abreast o the needs through tory and use of ra Program, ticularly i inexpensi can be s around, e needs. F handling labor and found tha neck" in tions whic ant drying is independ through t

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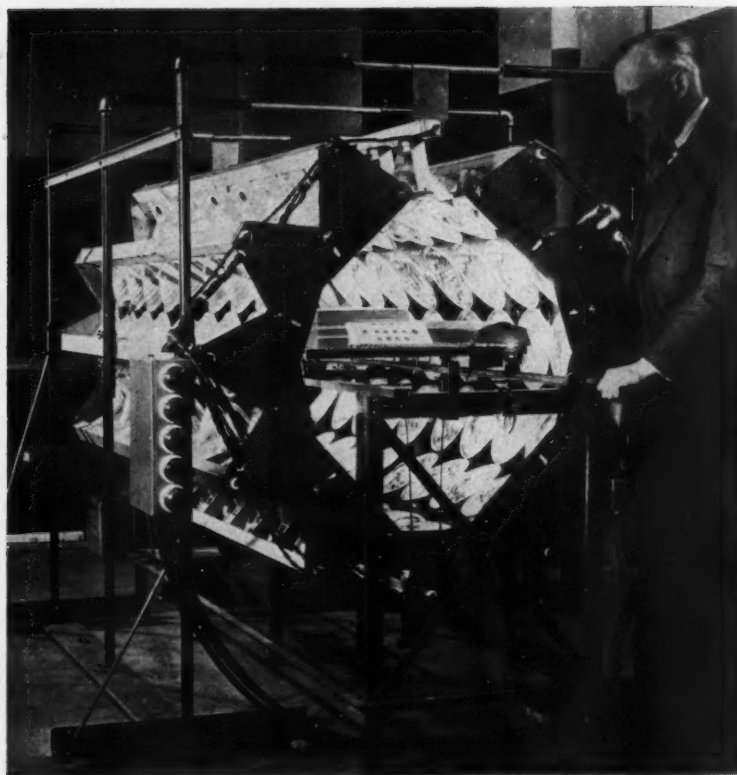


Illustration No. 2 shows a "wrapped surface" tunnel obtained by hinging each row of lamps so that lamps can be brought close to the object to be dried. Closeness adjustment of lamps is desirable (see Illustrations 5 and 7.)

Radiant Energy [Infra Red] Drying*

I NTEREST in, and application of, radiant energy drying has increased greatly in the last year. The Committee has endeavored to keep abreast of developments in this field and to serve the needs of utility customers in the Chicago area through continued experiments in the laboratory and field. One factor in the greatly increased use of radiant drying is the National Defense Program, to which this form of drying is particularly adapted inasmuch as it is highly flexible, inexpensive to purchase and easy to install. It can be set up and started quickly and shifted around, expanded or contracted to suit changing needs. Radiant heat shortens the drying and handling time and therefore conserves space, labor and drying expense. It has frequently been found that the drying operation is the "bottle-neck" in processing, particularly air-dry operations which are affected by humidity. With radiant drying which requires no warm-up period and is independent of humidity, products are moved through this stage without delay.

Tunnel Assemblies

At the time of the last progress report the Committee employed a laboratory tunnel shown in Illustration No. 1. The tunnel was theoretic-

*Case study No. 71, Utilities Research Commission, 72 W. Adams St., Chicago, Second Progress Report. Reprinted by permission.

cally adjustable, but actually it was tedious to change the reflector and lamp adjustments, the operation requiring from 2 to 3 hours time. Furthermore, the design did not permit of high concentrations of energy. It was therefore decided to build a new tunnel based on the principle of the "wrapped surface;" that is, the faces of the reflectors in the tunnel may be considered to form a continuous surface which should be wrapped around the object to be treated. If the hinging devices are at or very close to this surface it becomes possible to change the form of it from a straight line to various curves and at all times maintain the closest possible spacing of reflectors automatically. Illustration No. 2 shows how this was accomplished in the tunnel designed by this Committee. One of the equipment manufacturers started the manufacture of this type of tunnel and is prepared to furnish complete assemblies of various capacities. Unless the utility customer intends to use his tunnel for a single type and size of work indefinitely, it is recommended that the flexible form be seriously considered.

The tunnel can be changed from a circular formation to the sandwich type in from 5 to 10 minutes, including change from platform conveyor to overhead trolley. The sandwich form is shown in Illustration No. 3. A horizontal sandwich type is also easily formed from the same

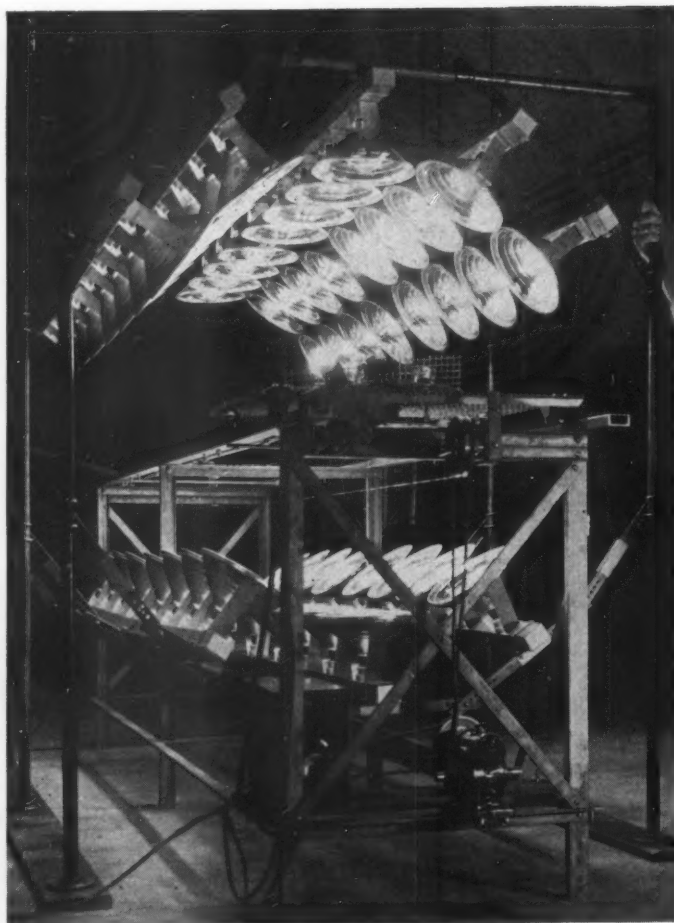


Illustration No. 1 shows a lamp arrangement which is only partially adjustable and requires two to three hours of time to adjust the lamps for minimum lamp-to-object distance.

assembly. This latter form is often desired for objects which cannot be readily slung from a trolley.

With reference to electric switching, a heavy-duty rotary switch is used with the switches facing right and left from a common wiring box. The group to the right controls the right half of the tunnel and the group to the left controls the left half. Also, the position of the switch corresponds to the position of the bar which it controls; that is, the top pair of switches controls the upper two bars, and so on down. In this way tapering down or building up of wattage is facilitated and no wiring diagram is necessary since the arrangement is one easily kept in mind.

Tunnel Enclosures

There has been some controversy as to the merits of tunnel enclosures which would intercept energy from the opposite bank of reflectors and redirect toward the work. If such are used the Committee considers it is preferable that they be in the "wrapping plane" referred to and not at the rear of the wiring bars, etc., where its redirecting value may be small. (We refer to radiant energy rather than convected heat.)

If, on the other hand, we desire merely to raise the air temperature in the tunnel through convection, then it is possible that the enclosure

should be *behind* the reflectors, so as to intercept the 30 or 35 per cent of the energy that passes backward rather than forward from the lamp and reflector assembly. This energy would serve to heat up the enclosures, some of which heat would be transmitted through the enclosing material and dissipated outside of the enclosure, while the balance would serve to heat up the air in the enclosure, and hence the work, thus conserving energy. However, when we confine the air in a tunnel we confine paint fumes (in the case of finishing jobs) and therefore tend to more rapid deposits on lamps and reflectors, and these deposits are found difficult to remove in some cases.

If an enclosure is used, it is recommended that a reasonable egress be provided for fumes or water vapor, otherwise it is possible the drying may be retarded. Also, the enclosure should be such that it does not itself create strong air currents due to chimney action.

To date the investigators have leaned toward the use of sheet metal which is in the plane of the reflector lip. This study is to be continued. The temperatures of lamp basing cement, sockets, wiring, etc., are involved.

Spacing of Reflectors

Illustration No. 5 shows the variation in watts per square inch at a distance of 6 inches. This shows the closest possible spacing of reflectors (staggered formation) and using a bank of 16 lamps. The 6-inch working distance is found to be practically the minimum since anything less than this does not focus in the beams of the reflectors and there is no gain in heating effect. Thus we have probably the greatest concentration of energy with 250-watt lamps in parabolic Alzak reflectors. In a sandwich type tunnel the value of 2.86 watts per square inch would be doubled (approximately 6 watts per square inch total).

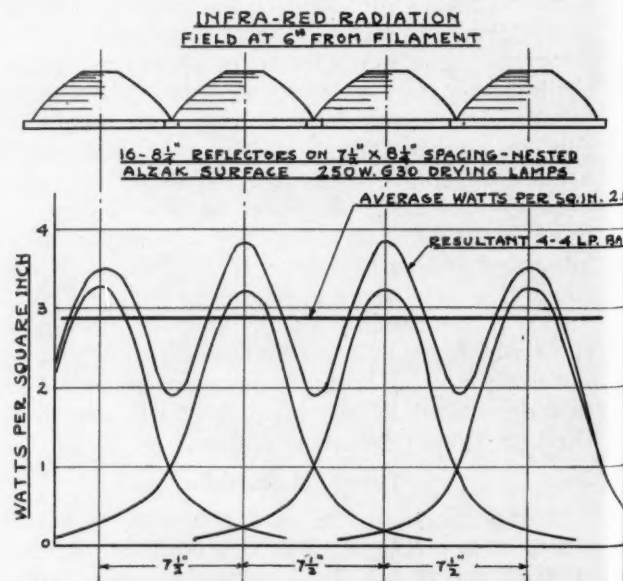


Illustration No. 5 shows the high energy concentration with lamps only 6 inches from object. A shorter distance is not advantageous since the object is within the focus of the lamp.

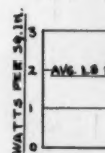


Illustration No. 6 shows the variation in watts per square inch at a distance of 6 inches. (two left and two right of center but is more or less the same.)

At first glance the distribution appears to be not so in the metal object from the point of view of small objects which are at temperature, or otherwise so.

Naturally, away from the work, there is a less. This No. 7 where 18 inches from the source of 1.53 all this is to advantage exist in part banks close all portions tour, etc. result of this early stage tion, etc.

Illustration No. 8 shows the variation in watts per square inch at a distance of 6 inches. It is a rectangular density and ever, the less perceptible to spacing with of energy. I and ship-sha

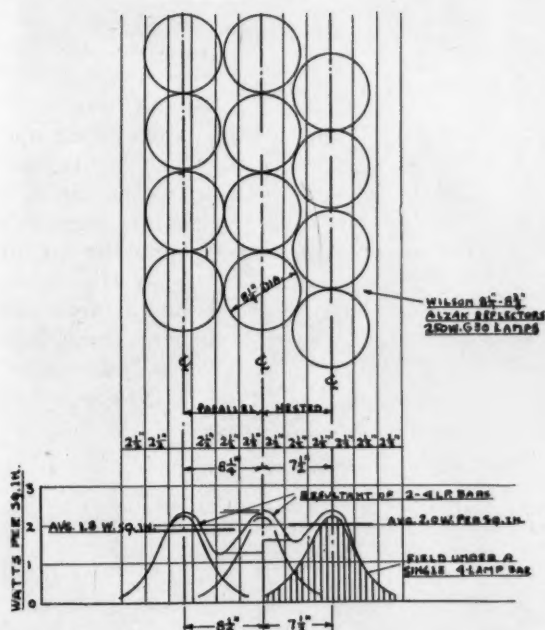


Illustration No. 8 shows energy obtained by staggering lamps (two right rows) and rectangular spacing (two left rows). Rectangular shows 10% less energy, but is more easily equipped with reflector inserts.

At first glance the unevenness of energy distribution appears undesirable, but actually this is not so in the majority of cases since with large metal objects there is conduction of heat away from the peaks into the valleys, and in the case of small objects they may be placed on a metal pan which tends to equalize the energy and temperature, or they may be oscillated, rotated or otherwise shifted.

Naturally, as the reflectors are moved farther away from the work, as in Illustration No. 6, there is a better distribution of energy on the work, but the amount of energy intercepted is less. This is still more apparent in Illustration No. 7 where the work is moved to a distance of 18 inches from the filament with an energy density of 1.53 watts per square inch. The point of all this is that it is frequently desirable to take advantage of the temperature tolerances which exist in paints and enamels and to adjust the banks close enough to the work so as to assure all portions an adequate bake regardless of contour, etc. Any incipient injury to finish as the result of this method can usually be detected at an early stage by "smoking" of the work, discoloration, etc.

Illustration No. 8 shows the resultant watts per square inch density for alternative spacing or arrangements of reflectors. At the right is shown a staggered spacing resulting in an average of 2 watts per square inch, while at the left is a rectangular spacing with a 10% lower energy density and a somewhat less uniform field. However, the left-hand arrangement is more susceptible to the placing of reflecting inserts between the reflector lips; also, the rectangular spacing with inserts is preferable as a conservator of energy. It also makes for a more symmetrical and ship-shape tunnel.

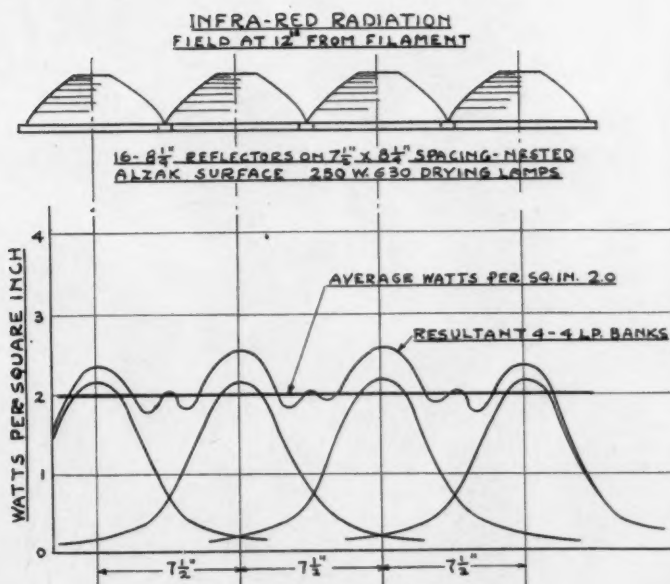


Illustration No. 6 shows energy obtained with lamps 12 inches from the object. Better distribution, but less intensity than Illustration No. 5.

Temperature vs. Watts Per Sq. In.

Paint manufacturers in general rate their products "So many degrees Fahrenheit for so many minutes." They have done this for years and there is a natural tendency to carry this over into radiant energy drying without considering the radical difference between radiant and convection drying.

For example, refer to Illustration No. 9, and assume that the object shown is to be finished with an enamel requiring 275°F for 3 minutes. If we place this in a tunnel providing 1 watt per square inch, the object would never attain the required baking temperature. On the other hand, if we placed it in a tunnel providing 5.9 watts per square inch the object would go right through

INFRA-RED RADIATION FIELD AT 18" FROM FILAMENT

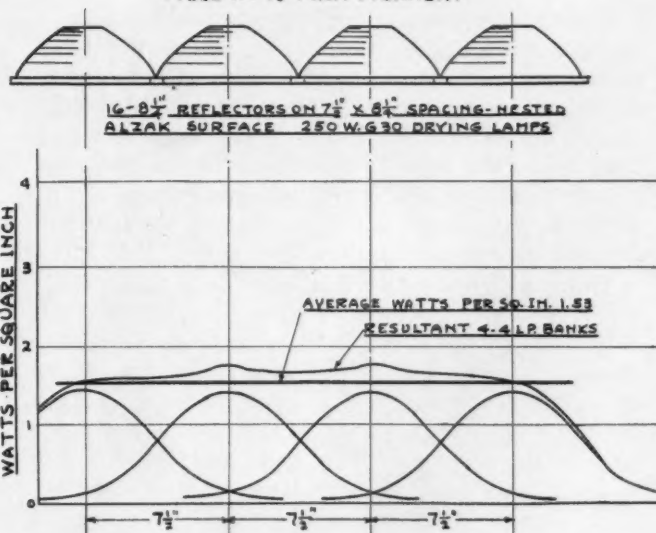
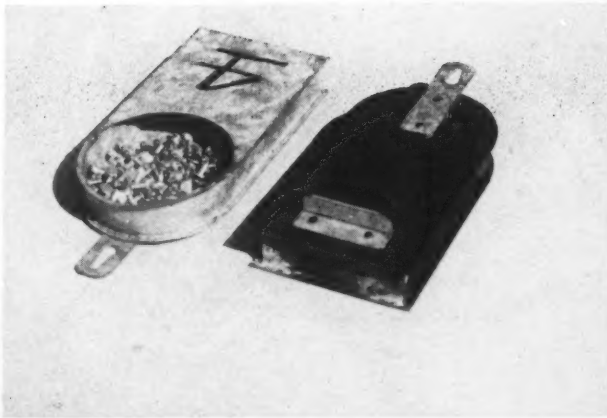


Illustration No. 7 shows decreased intensity with lamps 18 inches from object, but more uniform surface temperature.



The short angle across the bottom tips the box forward on the bench so the rivets slide under the hole for easy removal. The slotted strap is the hanger.



Boxes are plainly marked for size and are also made of the same material as the rivet—copper for copper, G. I. for G. I., etc.

These Home-Made Boxes Answer—

Where's The Rivets?

By Lawrence E. Gichner
Gichner, Inc., Washington, D. C.

"WHERE are the rivets?" is the theme of a song that is sung in countless sheet metal shops throughout our nation."

The chorus runs like this: "Who put the five pound rivets in the two pound box? Who mixed the three pound rivets with the fours? There are positively no copper rivets here at all."

But in the roofing and sheet metal plant of Acme Supply Co. of Miami, Fla., this condition of perplexity and confusion in search of the elusive pellet no longer exists. "Our boxes," H. Wedemeyer humorously explains, "were made in spare time when the boys had nothing to do, and as a result they cost us plenty, but regardless of the expense, they have saved in wasted time an infinitely lot more than they ever cost."

Hung neatly on the wall next to a large table where the greater part of their riveting is done, these boxes have several features to commend them. (1) The galvanized iron rivets are stored in galvanized iron boxes, the copper rivets are kept in copper ones. At a glance the mechanic knows in which row to look and select. (2) Poundage is indicated in large clear numerals. This seems to be a considerably better system than a custom much in vogue of soldering an index rivet on the outside cover.

Mechanics, for convenience, frequently place boxes on the very same table where riveting is done. Thumping and banging bumps the rivets about and they slip elusively back under the lid. This requires the mechanic to pick up the container and shuffle the rivets to the front. However, by mounting an angle iron on the back at the bottom, thus tilting the box forward, it perpetually feeds itself.

The typical box measures $8\frac{1}{2}$ inches long, $4\frac{3}{8}$ inches wide, $1\frac{1}{8}$ inches deep with a $3\frac{15}{16}$ -inch hole at the upper end, with a $\frac{1}{2}$ -inch angle on the back. The slotted tab for hanging projects $1\frac{5}{8}$ inches above the top is $1\frac{1}{8}$ inches wide, and the 1-inch slit is $\frac{3}{8}$ inch at the widest portion and $\frac{1}{8}$ inch at the narrowest. The tab can be either riveted or soldered on the back and the same can apply to the angle iron.

The number of different pound rivets used in each shop varies with the range of work done. As a result, each shop can adopt the quantity of boxes to be made and hung to its own individual needs. The seven different types which the Acme Supply Co. uses neatly covers their requirements and shops doing a general line of sheet metal work will probably find that these seven will equally well fill their average needs.



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YOUR CUSTOMERS WILL WELCOME *This Good News*



Uncle Sam wants to prevent property damage and protect the health of his home-front workers. This is why a limited amount of galvanized sheet metal has been allocated for the repair of roof drainage systems, smoke pipes and other vital sheet metal work.

Many home owners do not know this. They think they must somehow or other "get by for the duration" with a defective flue or damaged drainage sys-

tem. You can prevent serious troubles, and save time and materials, by informing home owners *now* that sheet metal may be used for necessary repairs. This also will help the war effort by forestalling complete replacements.

In times of scarcity it undoubtedly is wise to make repairs with an especially durable metal such as ARMCO Ingot Iron. While ARMCO's mills are going full blast on war produc-

tion, WPB has released some of this easy-working galvanized iron for maintenance work. Ask your ARMCO distributor if he has a supply on hand. The American Rolling Mill Co., 1391 Curtis St., Middletown, O.



THE AMERICAN ROLLING MILL COMPANY



Would you turn your back on a wounded Soldier ?

You think you wouldn't...you don't mean to...

But unless you are giving every precious minute of your time...every ounce of strength that you can spare...towards helping win this war as a civilian, you are letting down those soldiers who are sacrificing lives to win it for you.

What you are asked to give up isn't much compared with what they're giving up. The extra work you undertake is small compared with the gigantic effort they are making. But to a wounded soldier, what you do can mean the difference between life and death.

You make the choice.

LOOK AROUND YOU! Pick your war activity—and get into it! In your local Citizens Service Corps or Defense Council there is something for every man, woman and child to do. If no such groups exist in your community, help to organize them. Write to this magazine for free booklet, "You and the War," telling what you can do to help defeat the Axis. Find your job—and give it all you've got!

EVERY CIVILIAN A FIGHTER

Contributed by the Magazine Publishers of America

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Association ACTIVITIES

Chicago's Air Conditioning Contractors' Alliance

IN AN attempt to obtain answers from Government Agencies to questions which perplex the warm air heating industry, particularly contractors engaged in new house heating, the Air Conditioning Contractors' Alliance of Chicago proposes to hold a number of open meetings at which a list of questions will be submitted to Government Officials in attendance.

The first such open meeting was held Thursday, April 29, with an attendance of about seventy-five. Government Agencies in Chicago were represented by M. M. Bowen of War Production Board, and H. S. Bailey; also by Wm. D. Sogatz, Chief FHA Architect, accompanied by Albert C. Zirwas, Architectural Examiner.

President W. G. Burgraeve described the purposes of the meeting and asked why the warm air heating industry should be penalized by a withholding of critical materials for essential heating purposes when other trades are granted sufficient materials to satisfy essential new construction needs. President Burgraeve cited specific cases, such as the electrical industry and the metal lath industry, which, he declared, are neither so essential as warm air heating.

Some twenty questions were presented to the Government representatives and these questions and answers follow:

1. What substitute materials are approved?

Answer: FHA does not issue any list of approved substitute materials. Each material must be approved individually for the particular job. The procedure is: Submit a set of plans showing the heating layout and a sample of the substitute material you propose to use. FHA will approve the plan and approve the material, or disapprove.

2. Do FHA use Standard Code as their authority for approving jobs? Do they have a Code of their own, or is it left to judgment of someone in FHA?

Answer: Heat losses are calculated according to the ASH&VE Guide. The gravity furnace installations are checked for compliance with the Standard Gravity Manual of the National Warm Air Heating and Air Conditioning Association. Equipment proposed is checked against the list shown on pages 14, 15 and 16 of FHA's "Amendments to the Minimum Construction Requirements for All New Dwellings" commonly known as MCR.

3. If left to one man's judgment, what heating authority does he use?

Answer: This is answered by Question 2.

4. Why are sizes of Cold Air which are standard in the industry such as 18", 20", 22", 24" changed to 17" and 23" by FHA? We have no patterns for such sizes.

Answer: FHA will approve use of the nearest standard size Cold Air pipe or Warm Air stack or Warm Air pipe, but prefers to have one size larger than one size smaller.

5. Do FHA approved plans check with Chicago Furnace Ordinance?

Answer: There seems to be some indecision as to what is meant by the Chicago Furnace Ordinance, but war housing in Chicago is

governed by the FHA manual mentioned in Question 2 and not by the city code. It is believed that the city code and the FHA manual correspond with perhaps the exception of the limitations established by the fire regulations.

6. What method of authority will FHA use for determining Btu requirements?

Answer: Answered by Question 2.

7. Will location of Warm Air Registers and Grilles be such that economy in materials be given consideration?

Answer: Generally speaking, conservation of material is insisted upon and this means Warm Air registers and Cold Air returns on inside walls. If framing makes this impossible, other locations can be used. Cold Air is not recommended from kitchens or bath rooms. The main Cold Air should be in the living room, rather than bedrooms.

8. How many copies of Heating Layouts must be furnished?

9. Should Heating Contractors and Builders both receive a FHA Approved Heating Layout for their own protection?

Answers to Questions 8 and 9 are that two copies of the Heating Layouts are required, but if the contractor wants to submit a third layout, FHA will approve this layout and return it to the contractor, or return it to the financing agency where the contractor may pick it up. If changes are made by FHA, these changes will be indicated on the approved plan.

10. Minor changes by FHA to a Heating Layout should not necessitate a complete new layout.

Answer: Minor changes do not require a complete new layout. Minor changes are indicated on the plan returned to the builder. On the third plan referred to above, such changes will probably be offered as an addenda letter, rather than drawn on the plan.

11. Please define a Straight Run of Duct in the meaning of the War Housing Manual.

Answer: Construction Department of WPB ruled at the meeting that a straight run of pipe means a duct longer than 3 feet. Therefore, any pipe which is under 3 feet between metal fittings can be metal or any leader pipe in the basement under 3 feet to the boot can be metal.

12. How was the factors, 15 square feet per warm air opening and 70 square feet per cold air drop arrived at? It has been found that a factor of .7 has been used to convert square feet to pounds. What gauge materials are we allowed to buy for heating duct-work?

Answer: The factors 15 and 70 were arrived at by asking manufacturers and jobbers for material quantity take-offs of typical installation plans. The factor .7 was specified by Washington and is for black iron 26 gauge.

13. What will be the procedure for checking compliance on installations, both on the installation itself and use of materials?

Association Activities . . .

Answer: No final compliance procedure has been established to date, but will be.

14. On what basis are we to figure heat loss through party walls on duplexes and row houses? Also what temperature difference must be figured in determining heat loss at inside stair wells, bungalows and two stories?

Answer: Party walls are figured for a temperature difference of 40 deg., depending upon the material and insulation, if any, but 40 deg. is general. For row houses, inside party walls are figured for a 30 deg. temperature difference. Basement stair wells are figured at a 40 deg. temperature difference.

15. What are the approved non-metallic materials that may be used up to the furnace? Will there be any restrictions on the use of metal for connecting joints of composition duct-work together?

Answer: Some non-metallic materials can be used right up to the bonnet, but no approved list can be given out and the same procedure as suggested in question 1 should be followed. In general, FHA suggests that any material having a paper binding will not be approved up to the bonnet, but materials such as asbestos-cement board are approved. The answer to the second part of Question 15 is that each job must be ruled on separately by FHA and WPB and, in general, the quantity of metal sufficient to connect the duct work will be granted for the particular job.

16. How will we proceed to get special equipment for fabrication of composition duct-work? Can priority assistance be obtained locally?

Answer: Items such as tools which do not cost over \$100 should be applied for on Form PD-200. Small tools and replacements can be applied for on a PD-1a.

17. With reference to substitute materials, that is non-metallic, are we allowed to extend the project rating even though the PD-105 does not list it? We have recently had to extend a rating for a transite pipe which is non-metallic.

Answer: In general, the rating granted the project as a whole can be extended. If this rating is not high enough to obtain the necessary material, a second application can be made for a higher rating.

18. Are we allowed to use any of the materials we have on hand, fabricated and flat sheets for installations, beyond the PD-105 allotment? The particular reason for this question is that we have a stock of tin mill black and other light gauge material bought early in 1942 that will hardly be suitable for use as fittings for connecting composition materials.

Answer: Materials on hand, regardless of when purchased can not be used in new construction work. Materials on hand can be used for replacement and repair work. Special cases such as tin pipe in stock may be granted dispensation by special personal application to Construction Division of WPB.

19. We have had some PD-105 allotments wherein the amount of material allowed was considerably less than 15 square feet for each warm air register and 70 square feet for each cold air drop, based upon the final approved heating layout. What is the proper procedure in this case?

Answer: Answered by Question 12.

20. How about FHA ruling specifying one furnace for each apartment? Whose authority is this, and for what is the reason?

Answer: In general, the health hazard said to prevail when air is circulated from one apartment to another, particularly in the case of sickness is the reason for this restriction.

R. Hamlin Petty, Sr., Managing Director of this association is writing a letter to everyone in attendance at this meeting, asking them to submit any questions they care to on new or old house heating; also, to give an idea of subjects, or problems they would like discussed at these meetings, or who they would like to hear—after which the Association will proceed accordingly.

NWAH&ACA Mid-Year Convention

The mid-year convention of the National Warm Air Heating and Air Conditioning Association will be held at the Drake Hotel, Chicago, on May 26, 1943, 9:30 a. m. C.W.T.

The halls of government and the halls of industry are dripping with ideas for post-war activities and plans. Hundreds of meetings have been and will be held for the purpose of guiding domestic business in the new post-war world. Our Association has assumed its full responsibility in its efforts to favorably guide the industry in its post-war activities.

President H. S. Sharp of our Association is pleased to announce that Paul B. Zimmerman, chairman of our Publicity and Merchandising Committee, will have a message of unusual importance for our convention on May 26th. Mr. Zimmerman will present an outline of a Post-War Market Development Program which will favorably affect not only our industry but the entire heating industry. How and why can the markets of our products be expanded in the Post-War Era? How can improved standards of comfort and health, performance, service, consumer and dealer education, place this industry on a reasonable profit level? The answer is—Hear Mr. Zimmerman.

President Sharp states that, according to present plans, several government men from Washington will be on the program, one of whom will speak on the subject of "Orders or regulations which have been or might be issued governing production" and the other on the subject of the "Controlled Materials Plan as it affects our industry."

Very timely and important subjects will be presented by F. G. Sedgwick, Chairman, Research Advisory Committee, and Professors Kratz and Konzo of the University of Illinois.

We urge you to make room and train reservations now. Don't wait. These are not ordinary times and hotels are crowded. Rates at the Drake Hotel, Chicago, are: Single rooms—\$3.50 to \$6.00; Double rooms—\$6.00 to \$9.00; Suites \$12.00 and up, per day. All rooms with bath.

This mid-year convention announcement is our cordial invitation for you to attend this very important meeting.

Geo. Boeddener, Managing Director,
145 Public Square, Cleveland

Wisconsin

The Sheet Metal Contractors Association of Wisconsin, Inc., held a Board of Directors—District meeting at Racine, Wisconsin, on April 10. The Board of Directors meeting was called at 2:30 and the District meeting at 3:15 p. m.

Bulletins listing materials and articles which members are anxious to buy or sell will be released every two weeks to all members. Members are asked to co-operate.

Member Hielscher brought Racine labor matters before the meeting and the secretary was instructed to contact N. W. L. B. for information.

Chairman Mantei gave an exhaustive report on pending legislation both in Congress and also at our State Legislature. He also orated on "Trends Affecting Industry," and urged members to be on the alert and to cooperate for the protection of the employers rights.

Paul L. Biersach, Secretary

Keep 'em Warm . . . Keep 'em Fit . . .



By Keeping Their Furnaces in Repair

To keep the production of planes, tanks, ships, guns and munitions flowing at top speed war workers must be kept warm, comfortable and fit.

That's where you furnace dealers can make an important contribution to the war effort . . . to do your part to see that every furnace in your territory is put in first class working order for next winter. Now is the time of year to check every RYBOLT furnace in your community and urge that it be cleaned and repaired if necessary. It's not only your responsibility as

a fighter on the home front but your opportunity as well, because it means profitable business for you.

For best results be sure to get genuine RYBOLT repair parts . . . made from original patterns with quality materials. You can count on their dependable performance because they are identical with parts used in the original RYBOLT unit.

To replace furnaces which are absolutely beyond repair RYBOLT units are available in limited quantities, under Government Order P-84, to regularly established RYBOLT dealers and jobbers.

**Save or Slave —
Buy War Bonds**

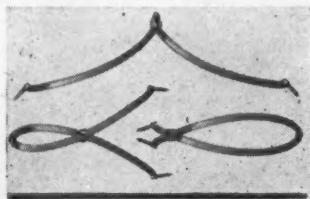


THE RYBOLT HEATER COMPANY
615 MILLER STREET ★ ASHLAND, OHIO

New PRODUCTS

21—Quickset Divider

Reiner & Campbell Co., Inc., 667 Norwood Terrace, Elizabeth, N. J., offers the Quick-Set divider for pattern drafting and layout in two sizes



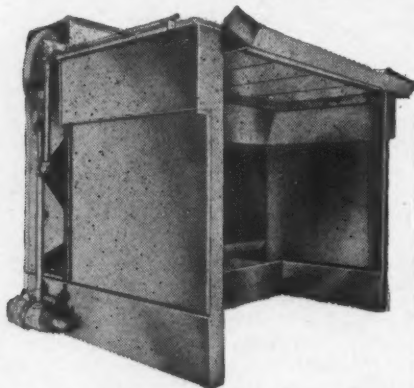
for circles up to 36 in. and 48 in.

Steel points are removable and pencil may be inserted for drawing. No center punch is needed.

22—Aqua Restor

Aqua-Restor Division, Mayer Mfg. Corp., 50 Division Place, Brooklyn, N. Y., offers a complete new line of spray booths and dust collecting equipment.

One unit, developed to meet high-speed industrial spraying requirements, offers maximum spray painting production, with labor and fire protection safeguards. Aqua-Restor's water curtains are continuous and con-



trolled. Absence of spray nozzles and moving parts insure minimum production losses for servicing. Features include high pigment reclamation; low h. p. pumping; fluorescent lighting.

Aqua-Restor units are engineered to specification, meeting small and large spray operation requirements.

23—Flux

Paul-Lewis Laboratories, Inc., 920 N. Fourth Street, Milwaukee, have perfected a new flux designed especially to work with the Victory solder of low tin, high lead content.

When used with the new Paul-Lewis flux, Victory solder flows easily and evenly, creating a strong bond. Formation of rust is prevented even on inner

surfaces, where removal of flux is impossible due to the fabrication.

Paul-Lewis flux works well with most metals. It is non-staining, less irritating to hands and clothes, and results in smooth seams and joints.

Paul-Lewis Laboratories, Inc., offers a limited number of samples.

24—Little Blacksmith

The J. F. Kidder Mfg. Co., Inc., 372 Colchester Ave., Burlington, Vermont, is introducing the No. 43 Little Blacksmith of steel plate arc-welded construction. The machine is designed to cut up to 5x5 in.—90 degree notch out of the corner or side of a sheet in one cut. In two cuts it will notch any angle greater than 90 degrees to 5x5 in. in size.



The machine will notch a rectangular piece out of the side of a sheet maximum depth 4 in., minimum length 5 in., maximum length 10 in. in two cuts, any length in several cuts.

The machine is equipped with gauges for duplicating, is quick acting and produces work which will fit accurately eliminating hand work.

Capacity is 14 gauge mild steel, 10 gauge aluminum. Bench space is 15x13 in., weight 200 pounds.

25—Soldering Fluid

Lloyd S. Johnson Company, 2241 Indiana Ave., Chicago, is manufacturing a new flux known as Lloyd's No. 6 soldering fluid for soldering with low tin-content solders.

No. 6 breaks down lead-rich solders into a fluid that will flow into inaccessible places. The flux has high enough capillary action to make solder flow evenly and completely through solder joints and provides higher tensile strength than heretofore obtained with 50-50 solders. This flux is satisfactory for soldering zinc-coated sheet metal—both galvanized and electroplated, lead coated sheet metal, tin plate, Terne plated, brass, copper, steel and all types of sweat fittings.

For materials that are easy to solder, the flux may be diluted with

For your convenience a number has been assigned to each item. Circle the items in which you are interested on the coupon on page 79 and mail to us.

△ Indicates manufacturer not listed in 1942 Directory.

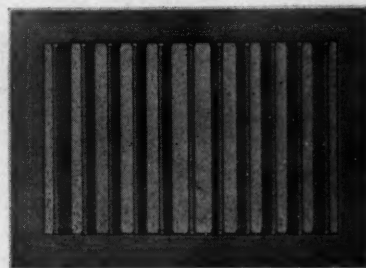
● Indicates product not listed in 1942 Directory.

one to two parts of water.

Free samples of Lloyd's No. 6 Soldering Fluid are offered.

26—Registers and Grilles

Tuttle & Bailey, Inc., New Britain, Connecticut, has designed a line of Non-Metallic registers and grilles for wartime installations, modern in design and with an effective area ap-



proximately the same as steel Airline and Flexair grilles and registers.

The bars rotate through an arc of 90 deg. and are individually adjustable. Each bar is capped with steel to assure permanent easy action.

The adjustable double deflection multi-shutter register consists of the adjustable double deflection grille with presdwood multi-shutter damper which is operated by means of a convenient lever on the face of the register, and provides control of the air volume as well as the direction.

27—Skilldrill

Skilsaw, Inc., 5033 Elston Ave., Chicago, announces Model 47 Skilldrill, designed to speed up tough "skin-drilling" in airplane construction— $\frac{1}{4}$ " in steel and $\frac{1}{2}$ " in wood.



Model 47 Skilldrill is small, light, compact; weighs 3½ lbs.; 7½ in. long; 2-9/16 in. wide. Diecast body, helical-cut gears and anti-friction bearings assure smooth, quiet running. Universal motor in four speeds (1800, 2500, 3500 and 5000 rpm.).

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DUST-STOPS CERTAINLY
SUPPLY A RAFT
OF DEALER HELPS!

DUST-STOP NATIONAL
ADVERTISING IS ALSO
BUILDING FILTER RE-
PLACEMENT BUSINESS.



Now is the time to make new records in Dust-Stop Filter sales

Yes indeed you can sell Dust-Stop* Air Filters this time of year. Here's a plan to help you make a real record—even if you are short handed.

This plan consists of a new free sales campaign to tell your customers that right now is the time to have their filters changed and their furnaces put in shape for next winter.

This campaign includes attractive mailing pieces, post cards, newspaper mats—everything to tell forced warm air furnace owners that you are equipped to replace Dust-Stops and to do other furnace repair and cleaning jobs NOW.

Also, the new catalog of Dust-Stop filter sizes enables you to take orders over the phone.

Send for these Brand New Business-Getters—they're FREE

Free ad mats for your local papers: They're attractive advertisements,

furnished to you in complete mat form. They remind customers that you are an official Dust-Stop dealer.

Free direct mail campaign: Well designed mailing pieces, imprinted with your name and address. They direct prospects to your store.

Free reminder postcards: Colorful double-return cards, effective in following up your mailing pieces. They make it easy for prospects to order Dust-Stops.

Free Radio Announcement Scripts: One minute spot announcements that pack a lot of selling punch. Turn them over to your local station.

Free counter and window displays: They immediately identify your store as Dust-Stop headquarters. Also included is a manual which explains how best to use this attractive material.

Free furnace labels: These are constant reminders of your name and service. They put you first in line for all kinds of furnace business,



Dust-Stops are Nationally Advertised

When you display Dust-Stop dealer helps, you tie in with the Dust-Stop national magazine advertising. This advertising appears in *The Saturday Evening Post*, *Life*, *Better Homes and Gardens*, and *The American Home*.

Make it a point today to call your distributor or jobber about Dust-Stop's important sales plan—"Pulling Profits out of the Air."

Owens-Corning Fiberglas Corporation, Toledo, Ohio. In Canada, Fiberglas, Canada, Ltd., Oshawa, Ontario.

FIBERGLAS*
DUSTOP*
U.S. Pat. Off.
AIR FILTERS

LAST YEAR'S BONDS GOT US STARTED

THIS YEAR'S BONDS



ARE TO WIN!

★ Last year saw nearly 30,000,000 workers voluntarily buying War Bonds through some 175,000 Pay-Roll Savings Plans. And buying these War Bonds at an average rate of practically 10% of their gross pay!

This year we've got to top *all* these figures—and top them handsomely! For the swiftly accelerated purchase of War Bonds is one of the greatest services we can render to our country . . . and to our own sons . . . and our neighbors' sons. Through the mounting purchase of War Bonds we forge a more potent weapon of victory, and build stronger bulwarks for the preservation of the American way of life.

"But there's a Pay-Roll Savings

Plan already running in my plant."

Sure, there is—but how long is it since *you've* done anything about it? These plans won't run without winding, any more than your watch! Check up on it today. If it doesn't show substantially more than 10% of your plant's pay-roll going into War Bonds, it needs winding!

And you're the man to wind it! Organize a vigorous drive. In just 6 days, a large airplane manufacturer increased his plant's showing from 35% of employees and 2½% of pay-roll, to 98% of employees and 12% of pay-roll. A large West Coast shipyard keeps participation jacked up to 14% of pay-roll! You can do as well, or better.

By so doing, you help your na-

tion, you help your workers, and you also help yourself. In plant after plant, the successful working out of a Pay-Roll Savings Plan has given labor and management a common interest and a common goal. Company spirit soars. Minor misunderstandings and disputes head downward, and production swings up.

War Bonds will help us win the war, and help close the inflationary gap. And they won't stop working when victory comes! On the contrary—they will furnish a reservoir of purchasing power to help American business re-establish itself in the markets of peace. *Remember, the bond charts of today are the sales curves of tomorrow!*

You've done your bit  Now do your best!

THIS SPACE IS A CONTRIBUTION TO AMERICA'S ALL-OUT WAR EFFORT BY AMERICAN ARTISAN

Association Activities . . .

Illinois

J. E. Peterson, president of the Sheet Metal Contractors Association of Illinois, tendered his resignation at a meeting held in Peoria on April 11. Mr. Peterson has closed out his business in Hinsdale and has taken a job with the U. S. Army Engineers, and is located in the Merchandise Mart, Chicago, classified as assistant civil engineer—a professional rating.

Because government work required all his time, the association accepted his resignation, and Joe Walter, Ottawa, was elected by the officers to fill the unexpired term.

Former President Peterson has accomplished a great deal for the association during his term of office. He was instrumental in presenting the Licensing Bill before the State Legislature. He worked untiringly on many projects for the Association. He has been active in getting a recognition by the War Manpower Commission of the essential nature of our industry. He has also been endeavoring to secure a rating higher than A-10 for our essential material. Under his leadership, the Association has prospered both numerically and financially.

WM. W. JOHNS, Secretary, Urbana.

Florida

The Roofing & Sheet Metal Contractors Association of Florida has postponed the annual convention scheduled to be held in April at Lake Wales. Hotel accommodations are not available and conditions at Orlando and at other cities, together with transportation difficulties, would probably be reasons for a very small attendance.

The Roofing and Sheet Metal Contractors Association of Florida, through "The Florida Roofer" of April 15, comments on the anti-closed shop program. Following a request from J. Tom Watson, Attorney General, State of Florida, Mack Fillingham was invited to attend a meeting held at Gainesville on April 10 with other representatives from associated business, economic, industrial and civic groups to discuss an anti-closed shop program and other related matters of state-wide interest. Joint House Resolution No. 13 has already been introduced and the points brought out would indicate that this resolution should be passed and that it should be submitted to a referendum of the people.

While it is not advisable for the Association to go into an elaborate program as has been outlined by the Graphic Arts Victory Campaigns' Committee, it is possible for The Florida Roofer to devote space to messages from manufacturers' representatives, roofing and sheet metal contractors so that the spirit of the convention can be carried on by mail throughout the year. Contractors are invited to register and send in their yearly dues of \$5. Considering the time saved and the expense of a convention trip, surely contractors can send in their message for publication in The Florida Roofer.

L. A. Burgess, Secretary-Treasurer,
915 N. Dixie Highway, West Palm Beach

New York State

The New York State Sheet Metal, Roofing and Air Conditioning Contractors' Association, Incorporated, and "The Merchandisers' Association" are distributing a Classified Advertisers' and Buyers' Guide—a wall card 11 by 14 inches in size. Members of "The Merchandisers Association" are indicated by an asterisk.

Patrick S. Varden, President
Clarence J. Meyer, State Secretary



Today, the greater portion of White-Rodgers manufacturing facilities is devoted to the manufacture of aircraft controls.

In the design and manufacture of this wartime equipment new applications of the White-Rodgers Hydraulic-Action principle of temperature control are being developed — applications that one day will bring added safety and convenience to a world at peace.

Until then, standard temperature and pressure controls for heating and refrigeration are available for high priority installations essential to the war effort.



Series 150 Heavy-Duty Line
Voltage Room Thermostat —
will handle multiple unit coolers or heaters—available with locked dial and "on," "automatic" and "off" dial positions to serve as manual control.



Official photo
courtesy U. S. Navy

WHITE-RODGERS ELECTRIC CO.
1215e CASS AVE. ST. LOUIS, MISSOURI

Controls for Heating • Refrigeration • Air Conditioning

IT'S WISE TO SELECT
WAGNER MOTORS
FOR ALL ESSENTIAL
REQUIREMENTS

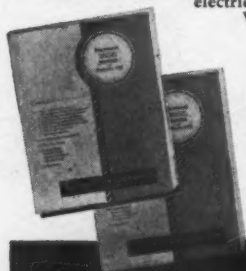
Type RP, Squirrel-Cage
Polyphase Motor. Because
of a simple construction
they are low-priced, easily
installed, and exception-
ally sturdy and dependable.
1/6 to 400-hp.



No matter what type of air-conditioning equipment is involved . . . whether large or small . . . regardless of the torque, speed or current requirements, you can choose a motor from the Wagner line that is correctly engineered for the job. The Wagner motor illustrated is only one of the many types of motors most frequently used for air-conditioning appliances. Each motor has special electrical or mechanical characteristics that make it the ideal motor for certain applications.

Wagner motors have many outstanding features, a few of which are given below—

- ✓ **CORRECTLY ENGINEERED.** The performance characteristics of Wagner motors meet the exacting requirements of all types of air-conditioning equipment. High starting-torque overcomes inertia and starts heavy initial loads . . . low starting-current reduces tendency of lights to flicker when starting . . . high full-load efficiency means low power bills.
- ✓ **QUIET OPERATION.** Dynamically-balanced rotors, accurately-machined end-plates, diamond-bored bearings—these and other important engineering features assure quiet, smooth operation.
- ✓ **STURDY CONSTRUCTION.** Stator frames are made of rolled steel—strong and rigid—will not get out of alignment. The well-insulated and carefully treated windings are securely wedged in place. The bases are formed from steel plate and are electrically welded. Motors are interchangeable with other types of the same frame size.
- ✓ **LOW MAINTENANCE.** Because of careful engineering, skillful workmanship, and high-grade materials, Wagner motors require no maintenance other than periodic inspection and oiling.
- ✓ **CAREFUL INSPECTION.** All motor parts and completed motors are carefully inspected, and must meet the specifications of recognized electric motor standards—an assurance to users that Wagner motors are free from defects, and will operate without attention for many years.



★ ★ ★ ★

Send for Free Bulletins

Bulletins MU-182 and MU-183 contain information that is necessary in the selection of the right motor for the job.

M43-5

Wagner Electric Corporation

ESTABLISHED 1891

6400 Plymouth Avenue, St. Louis, Mo., U. S. A.

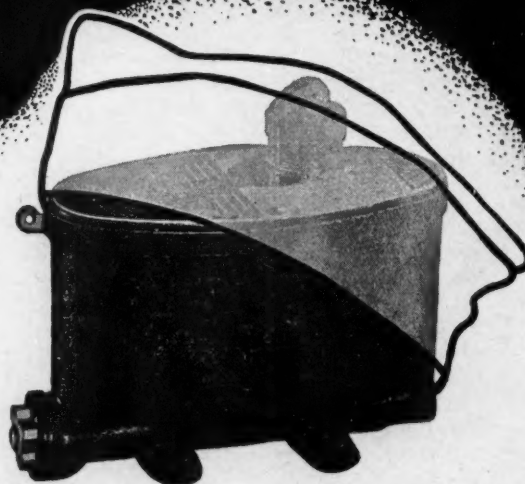
ELECTRICAL AND AUTOMOTIVE PRODUCTS

IT'S



DEPENDABLE

Fighting controls **NOW**



THE precision-skill, men and machines that make A-P DEPENDABLE Oil Control Valves are doing another vital job today . . . Equipping Uncle Sam's Fighting Planes with many types of precision assemblies . . . Parts like *Hydraulically operated high precision aircraft units.*

These "components for enemy destruction" are coming off A-P Test Racks FAST today, built to accuracies typical of A-P products.

Meanwhile, watch for new Postwar progress in A-P Dependable Oil Controls for home heating appliances.

AUTOMATIC PRODUCTS COMPANY
2452 NORTH THIRTY-SECOND STREET
MILWAUKEE WISCONSIN



DEPENDABLE
Oil Control Valves

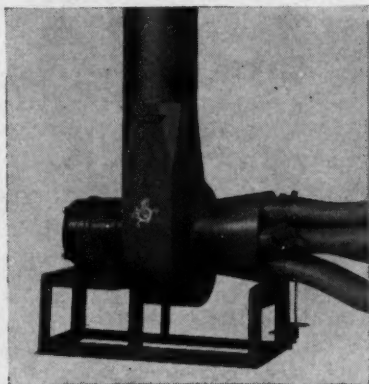


New Products

For your convenience in obtaining information regarding these items, use coupon on page 79.

28—Fume Exhauster

Chelsea Fan & Blower Co., Inc., 1206 Grove St., Irvington, N. J., offers a new and improved fume exhauster—fumes, gases, dust, filings and grinding compounds do not come in contact with the motor.



The newly developed centrifugal-type blower wheel is made of 1/4-inch steel. The frame work is welded with handle for carrying. The adapters are interchangeable and can be used for suction or blowing.

△29—Scaiflux

Scaife Company, Oakmont, Pa., has developed Scaiflux 21 through its Mellon Institute Fellowship for use in its own armament brazing operations. Scaiflux 21 is a silver alloy brazing flux—a scientifically compounded low surface tension flux. Finding Scaiflux is adapted for use in brazing any type of ferrous or non-ferrous alloy, the company is making the flux available to industry.

Scaiflux 21 has a low melting point and low surface tension. It is fully active at 900 deg. F. It spreads evenly over the surfaces to be joined, dissolving all of the oxides and protecting the cleansed surfaces from further oxidation. Scaiflux permits a wide variation of temperatures during brazing, remaining stable and active at temperatures above 1650 deg. F.

Scaiflux is soluble in 140 deg. F. water, eliminating the need of acids, alkalies, or other reagents for cleaning brazed parts.

Scaiflux 21 is available in both paste and dry form and meets Navy Specifications No. 51-F-4A, Army Specification No. AXS-500, and Air Corps Specification No. 11316-A.



△30—Welder Turban

American Optical Company, Southbridge, Mass., announces a new protective turban for women welders styled by John Fredericks, guided by a practical welder. The new hat is practical, comfortable to wear—with or without helmet—provides protection against flying sparks, and holds the hair snugly in place. Its features:

Leather or Cassimere—Offered in lightweight gray or brown leather, chrome tanned; and also in pin-striped dark gray cassimere, lightweight, fire-resisting, cool.

One-piece construction, assembled by snaps only—can be easily disassembled for cleaning.

One size fits every type of head closely enough.

Protects hair, ears, and back of neck from flying sparks.



What More Can You Want?

DIRECT THERM UNIT HEATERS STOKER-FIRED

Low-Cost Heat

- + Quick Installation
- + Even Temperature
- + Metal Conservation
- + No Maintenance

= DIRECT THERM UNIT HEATERS

For coal, gas, and oil. Made in 6 sizes (300,000-1,700,000 Btu.)

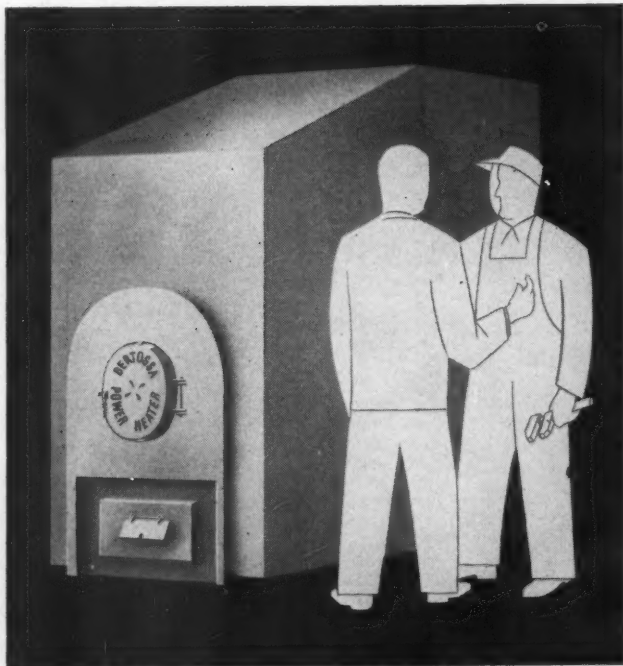
A I R T H E R M

MANUFACTURING COMPANY

706 S. SPRING AVE. • ST. LOUIS, MO.

Power Heaters

FROM 300,000 to 2,800,000 B.T.U'S PER UNIT
—TODAY THEY'RE WORKING FOR UNCLE SAM
• TOMORROW THEY'LL MEAN PROFITS FOR YOU



Bertossa Power Heaters are today working overtime heating army camps, navy bases, hospitals, utility buildings, etc., for United Nations forces all over the world. And here at home they are being specified by heating engineers and architects for homes, churches and industrial buildings.

This popularity is due to (1) compactness of complete blower and heating unit; (2) down draft flue for increased efficiency; (3) 90% direct heating surface and (4) adaptability for complete air conditioning.

From every standpoint the Bertossa has proven its effectiveness on the job—and likewise its profit opportunities to live-wire dealers.

Bertossa

JACKSON & CHURCH COMPANY, SAGINAW, MICHIGAN

New Literature

For your convenience in obtaining copies of new Literature use the coupon on page 79.

236—Floor Surfacers

Stonhard Company, 401 N. Broad St., Philadelphia, offers literature covering their Stonhard Resurfacer for floor repairs and resurfacing material. The company makes materials for resurfacing, patching, waterproofing floors, walls and roofs.

237—Evaporative Coolers and Condensers

General Electric Company, Air Conditioning and Commercial Refrigeration Divisions, Bloomfield, N. J., has issued a booklet describing the new line of G-E evaporative condensers and evaporative coolers.

The booklet—8 pages in black and orange—offers some general application information with regard to war-time industrial uses of this equipment, shows features and has a summary of specifications.

238—Felt-Cote Roofs and Siding

American Steel Band Company, Felt-Cote Division, Bowman Building, Pittsburgh, is distributing a 28-page, spirally bound catalog, describing Felt-Cote asbestos-protected metal roofs and siding, accompanied by a general diagram and details of Felt-Cote construction, for hangars, airplane assembly shops and repair docks, munition works, ordnance plants, supply depots and warehouses.

There is a history of Felt-Cote, advantages, skill in erection, etc.

239—Doall Contour Saw Textbook

Doall Service Company, 1201 Thacker St., Des Plaines, Illinois, announces a new 265-page textbook—"Doall Contour Saws"—which gives comprehensive study to the Art of Contour Machining, its cutting tools and the Doall training program. Latest techniques for Contour Machining: internal and external three dimensional parts for "short run" forgings, multiple identical parts in one operation for "short run" stampings and facilities for handling both massive or small jobs are presented as reported from the field.

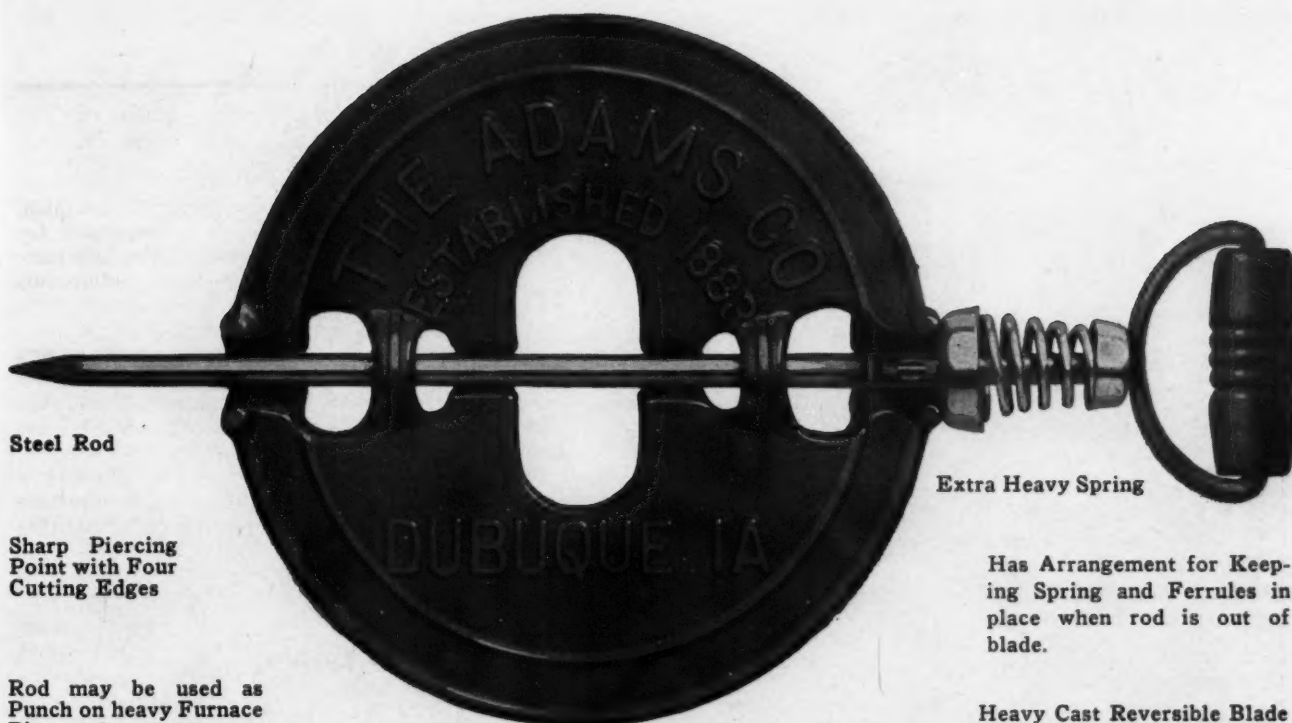
Those not having Contour machining equipment will find the book contains information to help them solve their shaping problems through this machining process.

Eighty-five pages of the book show how Contour machining replaced conventional machining to save both time and material on the production line as well as on special jobs. Another twenty-six pages illustrate and discuss methods used to find the best type of saw, saw velocity and feed pressure for cutting any material of any thickness most economically.

Over 80 per cent of the text is shown through pictures with charts and diagrams giving easy access to proper speeds and feeds in the shaping of all basic materials: ferris and non-ferris metals and alloys, plastics, wood, fiber board, rubber, etc. Since every illustration is taken from actual record, they form an impressive and factual educational "short."

A forty-four page section at the back of the book gives specific information on machine tools and machine shop practice for the student or learner. It also shows the facilities for free training in Contour machining offered by the Doall Trade School.

The textbook is shop coat-pocket size bound in the conventional manner with blue embossed covers to resist smudging and wear from hard usage. It is now being distributed free by the Doall Service Office, 1201 Thacker Street, Des Plaines, Illinois, to industry, training schools and public libraries. Men on the production line, from the cut-off saw operator to the best toolmaker on the jig boring machine, student and engineer will find it of immense value.



Steel Rod

Sharp Piercing
Point with Four
Cutting Edges

Rod may be used as
Punch on heavy Furnace
Pipe

Extra Heavy Spring

Has Arrangement for Keeping
Spring and Ferrules in
place when rod is out of
blade.

Heavy Cast Reversible Blade

• 1883 — Sixty Years of Service — 1943 •

ADAMS

DIAMOND SMOKE PIPE DAMPER
MANUFACTURED BY
THE ADAMS COMPANY
DUBUQUE, IOWA, U. S. A.

THE *MARK* THAT MEN OF SKILL RESPECT

Men who work with sheet metal demand equipment that responds to and complements their individual skills.

To them the mark of PEXTO is a guarantee that machines and tools are built by mechanics who know their special needs . . . that close adjustments can be made easily . . . that operations are smooth and accurate . . . and that the finished work is of a quality of which they may justly be proud.

SHEET-METAL
WORKING
MACHINERY



Combination Folder and Brake

THE PECK, STOW & WILCOX COMPANY Since 1785 SOUTHINGTON, CONNECTICUT, U. S. A.

New DISCOVERY A SUPERFLUX

SOLVES YOUR WARTIME PROBLEM OF LOW-TIN
VICTORY SOLDER



FLOWS EASILY and evenly, penetrates the smallest joints and seams to create a stronger bond than ordinary flux. Acts smoothly with Victory solder.



RUST does not form on inner surfaces when this new discovery is used — even where fabrication prevents removal of the flux.



ALL-PURPOSE eliminates the necessity of more than one type of flux, because it solders most metals quickly, effectively. Works well with Victory solder.



MILD, safe, easy to use; less irritating and injurious to the hands and clothing of operators.



WORKMANSHIP results in smooth seams and joints; won't stain surfaces like ordinary flux. Speeds up production — reduces rejects. Avoids the problems of Victory solder.

YOU BE THE JUDGE!

Send for free Sample
A trial will convince
Jobbers . . .
Write for information



Paul Lewis
Laboratories, Inc.
MANUFACTURING CHEMISTS

922 N. 4th STREET

MILWAUKEE, WISCONSIN

New Literature

For your convenience in obtaining copies of new Literature use the coupon on page 79.

240—Die Cushion Model

The Dayton Rogers Manufacturing Co., 2835 12th Avenue South, Minneapolis, is offering for free distribution a die cushion cutout model showing the details of pneumatic die cushion equipment as applied to the average punch press. This cutout model is 8½ by 11 in. of a laminated cardboard. By pressing the arrow at the top, it gives detailed information as to the working principles of pneumatic die cushion equipment as applied to punch presses. It shows in detail how the blank is automatically held in tension and shows how the press tools produce a strong, smooth shell throughout the work cycle of the draw die. It also shows the details of how a single action press is used in place of a double action press, or where a double action press can be used in place of a triple action press. It also gives complete details as to the basic working parts of any standard die cushion, together with complete piping diagram.

241—Tag Catalog No. 1200

C. J. Tagliabue Mfg. Co., Park and Nostrand Avenues, Brooklyn, N. Y., is distributing Catalog No. 1200, announcing their new lines of indicating and recording controllers for temperature and pressure.

This 40-page book presents three types of controllers—On-off, Throttling and Automatic Reset.

The adjustable On-Off model is popular on industrial applications of small time lag, and large heat capacity.

The full range throttling model is for use on applications of considerable process lag, or of small heat capacities. It is also suited to processes where load changes are small and of short duration.

The automatic reset full range throttling model solves more difficult control applications where large load changes extending over long periods are encountered.

242—1943 HV&AC Guide

The American Society of Heating and Ventilating Engineers, 51 Madison Avenue, New York City, offers the 21st edition—1943—of Heating Ventilating Air Conditioning Guide. This edition contains 48 chapters of technical data and general information, including all phases of heating, cooling, ventilating and air conditioning, and related phases of refrigeration. New data has been added.

Among the subjects revised and brought up to date are: Thermodynamics of Air and Water Mixtures; Heat Transmission Coefficients; Heating Load; Estimating Fuel Consumption; Radiators and Convectors; Hot Water Heating Systems and Piping; Mechanical Warm Air Systems; new data on Unit Heaters, Ventilators, Humidifiers, Air Conditioners, Air Coolers and Attic Fans; and new data on Air Cleaning Devices where lint is an important factor. Other important revisions have been made to the chapters on Air Distribution, Air Duct Design, Sound Control, Motors and Motor Controls, Industrial Air Conditioning and Exhaust Systems, Radiant Heating and Solar Water Heaters.

A new chapter, entitled Abbreviations, Symbols and Standards has been added; and valuable information on state laws and codes relating to heating, ventilating and air conditioning forms an entirely new section of the book. An Emergency War Practices section, outlining methods for conservation of materials, has been appended.

This data is fully indexed to permit convenient reference. An important part of this GUIDE is the revised Catalog Data Section, in which useful equipment data has been supplied. In 1268 pages this volume includes 872 pages of technical data; 264 pages of equipment data; and the Roll of Membership of the Society—bound in a blue cover with gold stamping. \$5.00 per copy. Thumb-indexed copies are \$5.50.

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BUILD YOUR POST-WAR FOUNDATION NOW —with the **LINCOLN ARC**

By equipping your shop now with a Lincoln Welder to handle war fabrication and maintenance work, you take a big step toward insuring survival in the post-war Battle for Business. You'll be able to do *better work at lower cost* now and in the tough days ahead on jobs like these:



Smoke Stacks. 32' long, 15" diameter, welded from 14-gauge galvanized sheets 48" x 48". Seams are all butt joints welded with carbon arc and copper-alloy rod. Saves 60% in cost and 17 lbs. of metal per stack, compared to riveting. Welded with Lincoln "Shield-Arc Jr."



Repair Broken Parts such as this farm cultivator lever quadrant to keep vital machinery working for Victory. 1001 similar jobs offer a profitable volume of work.

"Bible" of Arc Welding. 1308-page "Procedure Handbook." 1810 illustrations. Authentic reference guide. \$1.50 postpaid in U. S.

THE LINCOLN ELECTRIC COMPANY
Cleveland, Ohio
Largest Manufacturers of Arc Welding Equipment in the World

"THIS Sweater Girl..."

**NEEDS A
FIELD DRAFT CONTROL**



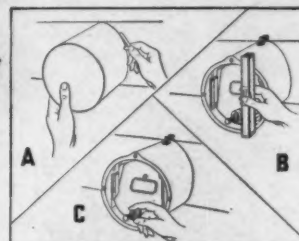
Heaping on extra sweaters is ONE answer to fuel rationing. A better answer, for YOUR heating clients, is a Field Control, capable of s-t-r-e-c-h-i-n-g fuel 5% to 25% further. Severe fuel rationing has put SALES

MAGIC into these simple words, "A Field Control keeps you WARMER on LESS fuel!" And because EVERYONE is responsible for keeping warm and well on less fuel, every home, office, store and factory is a prospect. There's real profit in each easy sale, installation usually taking less than 30 minutes for a domestic unit.

INSTALLATION'S SIMPLE AS **ABC**

A Hold collar snugly against stove pipe in correct position and mark outline on pipe. Snip hole in pipe 1/2" smaller than mark; snip slits 1/2" deep around hole.

B Strap collar to pipe; bend 1/2" slits into collar. Fasten control into collar and true control up and down and sideways by checking with carpenter's spirit level for accuracy.



C Factory balanced, control requires only a simple hand adjustment for the particular installation. Set for minimum draft consistent with combustion and heat demands as required.

FIELD CONTROL DIVISION
MENDOTA, ILLINOIS

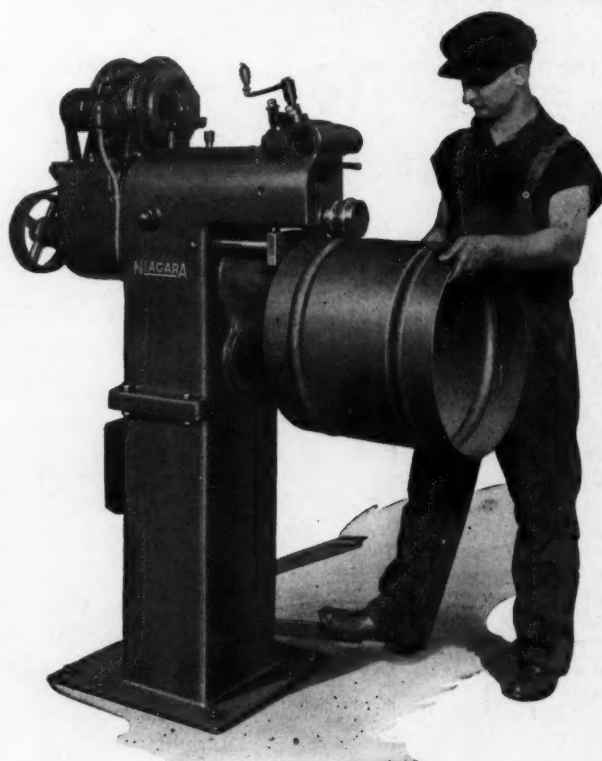
This motor driven combination machine with interchangeable rolls combines power operation, ability to handle heavy gage work, and easy operation.

Foot control of clutch and upper roll allows the use of both hands for holding and guiding the work.

Interchangeable rolls make one machine capable of burring, turning, wiring, beading, crimping, flanging, slitting and circle cutting. Beading and crimping can be done in one operation.

Gears and shafts are enclosed. Gear box contains intermediate gears and clutch, all running in oil. Clutch gives instant hand and foot control and can be locked for continuous operation.

Write for Bulletin 75A. NIAGARA MACHINE & TOOL WORKS, Buffalo, N. Y. District Offices: Detroit, Cleveland, New York.



The SILVER SIDE of the FUEL OIL "CLOUD"



Do you realize that every newspaper and every radio station in America has been "selling" oil burners during the past winter?

Yes, *selling* them! Not directly, of course. Nor intentionally. Yet publicising them as no private advertising campaign could hope to do.

Every American who can read, now knows how regretfully the owners of oil burners converted to coal. And now knows that oil burners are a *major* factor in heating the nation's homes, offices and factories. Two-inch headlines and spot-news broadcasts have told the story as it never has been told before.

Already it is apparent that the public has a new interest and a new appreciation of oil burners. The Gallup Poll reports: 7% of the people questioned in a recent poll said their first major purchase after the war would be an oil burner.

It is our belief that untold opportunities for new usefulness are being opened up for the Oil Burner Industry. Every ounce of energy which we of the S. T. Johnson Co. can spare from building Aquilux Water Heaters for the needs of Uncle Sam, is being used to plan for a still bigger job in happier years ahead. S. T. Johnson Co., 941 Arlington Avenue, Oakland, California, and 401 No. Broad Street, Philadelphia, Pa.

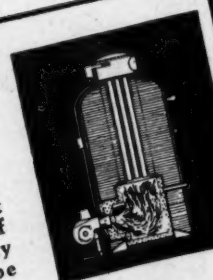
S. T. JOHNSON CO.

40 years of engineering and building fine Oil Burning Equipment



AQUILUX Heavy Duty WATER HEATERS

Though the Army and Navy are taking most of our production of these high-efficiency heaters, we may be able to help you meet hot water problems for War Industry or Military installations. Aquilux heaters are built with capacities up to 540 gal. per hr. and in 4 basic types. We will gladly send detailed information.



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New Literature . . .

For your convenience in obtaining copies of new literature use the coupon on page 79.

243—D-E Insulating Materials

Armstrong Cork Company, Insulating Refractories Department, Building Materials Division, Lancaster, Pa., is distributing literature covering Diatomaceous Earth insulating material—fill-type insulation and insulating concrete.

244—"S T" Solder Properties

Federated Metals Division, American Smelting and Refining Company, Barber, N. J., offers a chart showing properties of "S. T." solders compared with the other common mixtures. "S. T." solders require more heat than ordinary tin-lead mixtures, but handling technique otherwise is the same. "S. T." solder is available in all commercial forms, including acid and rosin core wire.

245—Expansion Bolts and Screw Anchors

The Rawlplug Company, Inc., 98 Lafayette St., New York City, has issued a broadside with a return mailing card in which is described and offered a 14x20 in. handy, ready reference wall chart covering "Expansion Bolt and Screw Anchor Dimensional Chart."

Users of expansion bolts are offered the chart on receipt of a letterhead request.

246—Insl-x

The Insl-x Co., Inc., 857 Meeker Ave., Brooklyn, N. Y., has just released a new 16-page and cover catalog entitled "A Modern and Better Insulation for Electrical Equipment."

Insl-x is a 15-minute drying synthetic. It has high dielectric strength, coupled with resistance to moisture, acids, alkalies, petroleum products, abrasive action, light, salt water.

Insl-x can be used to insulate electrode holders and arms of spot welding machines.

247—Dust-Stop Filter Sizes

Owens-Corning Fiberglas Corporation, Nicholas Building, Toledo, Ohio, has published a 28-page catalog of Dust-Stop air filter sizes for practically all makes and models of domestic forced warm air furnaces and air conditioning units. The catalog also covers the number of filters required for each make and model.

The alphabetically arranged listing, used in combination with the Fiberglas Dust-Stop price list was designed to help dealers save time in handling sales, telephone and over-the-counter inquiries.

FOR YOUR CONVENIENCE

American Artisan, 6 N. Michigan Ave.
Chicago, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "New Products" and "New Literature."
(Circle numbers in which you are interested):

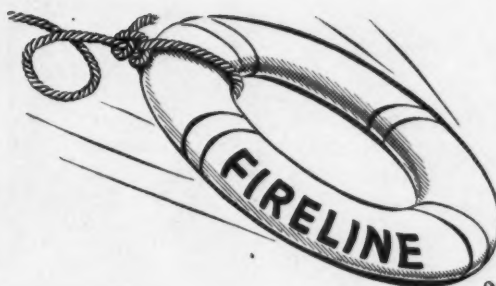
21	22	23	24	25	26	27
28	29	30				
236	237	238	239	240	241	242
243	244	245	246	247		

Name

Company

Address

Are you Manufacturer _____ Jobber _____ Dealer _____



A life-saver for furnace men



YES, Fireline is proving a life-saver for many furnace men in these difficult days when other merchandise is so hard to obtain. Your jobber has Fireline in stock for you. No priorities or permits are needed.

Here is a good, profitable item which you can sell to every furnace owner in your territory. For old furnaces, you can sell Fireline to repair cracked and burned out firepot castings; for good furnaces, you can sell it to protect and preserve the castings.

Furnace men have made hundreds of profitable jobs by showing furnace owners how Fireline seals the cracks and holes in burned-out castings as nothing else will—how it forms a durable refractory lining that gives more heat from less fuel. The fact that Fireline costs less than a new firepot is the final sales clincher.

Fireline is a money-maker for you because it offers the easiest, most profitable way to put a furnace in shape. You do the job in a fraction of the time required to dismantle a furnace and replace the firepot castings. So in spite of the fact that you can quote a low price that gets the job, you can make just as much money by doing a Fireline job.

Write for bulletins, prices, and name of nearest jobber.

FIRELINE STOVE & FURNACE LINING CO.

1816 Kingsbury St. (Dept. E)

Chicago, Illinois



• Fireline saves metal vitally needed for war production. It forms a refractory lining which salvages burned-out firepots—protects good castings.



FIRELINE



U. S. REGISTERS

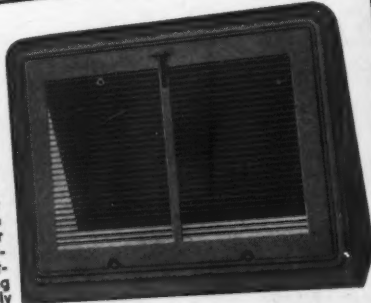
In Advanced Post-War Models and Styles—Are now available from the Largest Inventories in the Industry. Slight changes and Substitutions may be necessary for More Prompt Service. Certain WPB orders have slowed down register deliveries—but we are carrying on—rendering service and delivering the Goods. Send us your Orders and Inquiries.

UNITED STATES REGISTER CO.
BATTLE CREEK, MICHIGAN

No. 40 SERIES

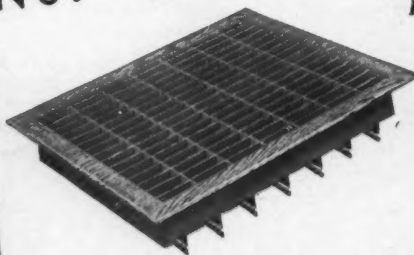
Gravity Baseboard
Registers

The Industry's Finest Modern Gravity Baseboard Register. Least Resistance—Complete Non-Vision of Register Interior with Removable Grille and Patented Grille Locking Feature. Definitely Leak-Proof when Properly Installed.



No. 400 TRUSSTEEL

Gravity Floor
Registers

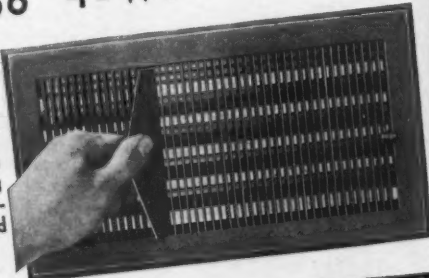


A heel-proof, maximum free area register. New design multiple valves run short way for easier operation, cleaner walls.

No. 256 4-WAY FLOW

A-C Register

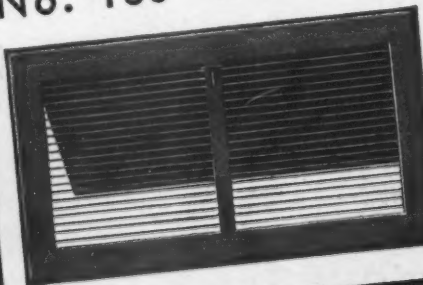
Vertical Grille-Bars adjustable to desired lateral air flow with Bending wrench. Lever-operated Horizontal Rear Valves.



No. 153 LOUVER-TYPE

A-C Register

Lowest Cost—Highest Quality—Single Valve—Non-Vision. The Industry's Finest Value in Air Conditioning Registers.



**SPEED UP ALL
PRODUCTION DRILLING**

with these **3**
SKILDRILLS!



The many other
SKILSAW DRILLS
give you a size and
type for every
drilling job!



● Everywhere SKILDRILLS are boosting War Production by boosting drilling output on every job! In aircraft plants SKILDRILLS speed up "skin-drilling" . . . on tank and engine assembly lines they "shoot holes" in drilling bottlenecks . . . throughout industry they're busy drilling more holes in less time. SKILDRILLS are light, compact, powerful . . . they get in tight places easier . . . go through tough metals faster . . . give you more drilling power and speed for every ounce of weight!

The features that make SKILDRILLS so superior are typical of the full line of SKILSAW DRILLS . . . a size and type for every job from fastest production drilling to heaviest boring and reaming. Ask for a demonstration of SKILSAW DRILLS on your own work today!

SKILSAW, INC., 5029 Elston Ave., Chicago

New York • Boston • Buffalo • Philadelphia • Cleveland • Detroit
Indianapolis • St. Louis • Kansas City • Atlanta • New Orleans
Dallas • Los Angeles • Oakland • Portland • Seattle • Toronto, Canada



SKILSAW PORTABLE
ELECTRIC **TOOLS**
★ MAKE AMERICA'S HANDS MORE PRODUCTIVE ★

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Floyd J.
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With the Manufacturers . . .

Milwaukee Annual Home Show

The 21st Annual Milwaukee Home Show was held at the Milwaukee Auditorium during the week starting March 13th to March 21st, 1943, inclusive.

M. L. Lavorgna, manager of Milwaukee sales for the L. J. Mueller Furnace Company, acted as vice-chairman of the executive committee and was appointed chairman of the 1944 Home Show. The show was well attended and even greater interest was displayed than had been anticipated.

The role of heating was given a new emphasis through the demonstration of the conversion of a single-family home to a two-unit dwelling.

"While conserving the equipment we now have, we must not lose sight of the developments of today, which will add to our comfort of tomorrow," said Mr. Lavorgna.

Anthracite Section Stoker Manufacturers

The organization of an Anthracite Section in the Stoker Manufacturers' Association was officially completed at a meeting of anthracite stoker manufacturers in New York City in April.

Executives in attendance at the meeting represented practically all manufacturers of hard coal burners, and elected Milton A. Young, Catskill, New York, as Chairman of the Anthracite Section. Mr. Young is Sales Manager of the Catskill Metal Works, Inc.

Three standing committees were named to handle problems and subjects dealing with anthracite stoker equipment. Frederick Kalmbach, President General Machine Co., Emmaus, Pennsylvania, was appointed chairman of a Development Committee; Harold A. Cooper, Cooper & Cooper, Inc., Pittsfield, Massachusetts, will act as chairman of the Trade Relations Committee; and Adair Rogers, President, Stewart-Rogers, Inc., Philadelphia, Pennsylvania, was named as chairman of the Engineering Committee.

D&E Stokers on Approved PD-668

Dickson Coal Company, Inc., Rockefeller Center, New York, will distribute standard "D & E Automatic Anthracite Burners" Model C, 21 inch, open-hopper, spill-over type, under the recent ruling of the War Production Board permitting the manufacture of a limited number of automatic stokers for civilian use.

This stoker model has an annual capacity of from 25 to 60 tons of Anthracite No. 1 Buckwheat. Its ratings are steam, E.D.R., 1,600 square feet; hot water, E.D.R., 2,200 square feet; and warm air, 2,000 inches. Timer relays, thermostats, and limit switches will also be supplied where these auxiliaries are needed. Ash-removal and bin-feed equipment and ash rings are not permitted, although these features may be added when the war emergency is over.

Before an order for a stoker can be filled, the customer's application, on WPB Form PD-668, must be approved by the WPB Field Office and returned to the Dickson Coal Company, Inc. "D & E" stoker distributors will have these forms available and will render prospective purchasers assistance in gaining approvals.

Ceiling prices will be charged, and shipments will be made by railroad unless truck shipment is specifically ordered.

Personal

Floyd J. Lucas is now associated with the Interstate Machinery Co., Inc., 1431 W. Pershing Road, Chicago.



**CHENEY
METAL**

The Modern Sheet Metal

BY combining sheet steel with stearine - cottonseed pitches and pulverized slate we have produced the outstanding successor to galvanized iron and sheet copper at about one-third the cost of copper.

Thoroughly tested against weather, moisture, heat, cold,

fumes, salt air and fire. Will not run at 230° F., can be bent double at 32° F., and is classified as fire retardant.

Cheney Metal is tough. It can be sheared, bent, Pittsburgh locked, mallated, die formed, riveted, soldered and worked with regular shop tools.

Forms easily into warm air heating or ventilating ducts, flashings, valleys, gutters, metal roofs, downspouts, termite shields, expansion joints, and all general sheet metal work.

AVAILABLE NOW

SHEETS (All Regular Gauges and Sizes)
CORRUGATED ROOFING, 26" AND 27½"
CONDUCTOR PIPE AND ELBOWS
GUTTER
2 AND 2 V CRIMP ROOFING
CLAPBOARD SIDING
CHENEY THRU-WALL FLASHING
CHENEY REGLET (for concrete)

SOLD BY THE FOLLOWING DISTRIBUTORS:

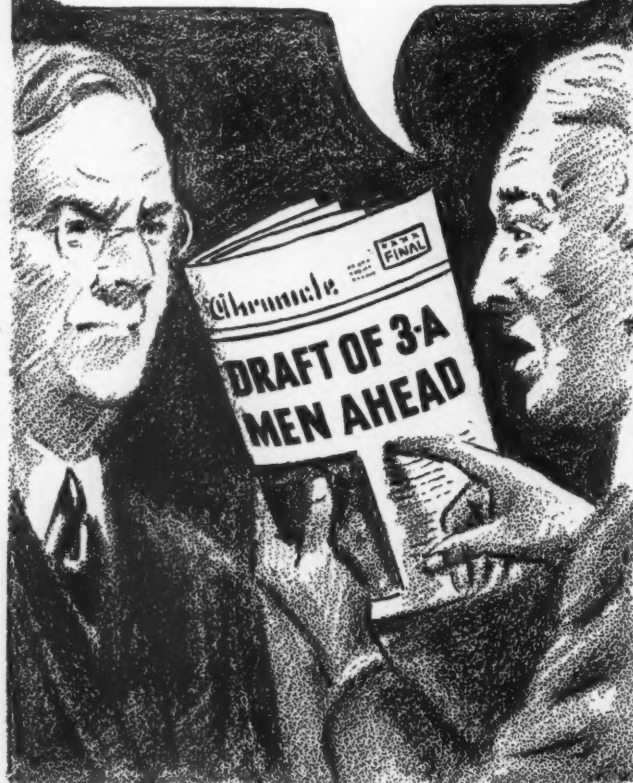
BALTIMORE: Lyon, Conklin & Co., Inc.
BIRMINGHAM, ALA.: Arnold Supply Co.
BOSTON: Herrick Company
BUFFALO: The J. M. & L. A. Osborn Co.
CHICAGO: Central Steel & Wire Co.
CINCINNATI:
The J. M. & L. A. Osborn Company
Central Steel & Wire Company
CLEVELAND: The J. M. & L. A. Osborn Co.
DAYTON, O.: Central Steel & Wire Co.
DETROIT: The J. M. & L. A. Osborn Co.
MEMPHIS, TENN.: Pidgeon-Thomas Iron Works
NEW ORLEANS: The Orleans Steel Products Co., Inc.
NEW YORK: Bayonne Steel Co., Inc., L. I. City
PHILADELPHIA: W. F. Petts, Son & Co., Inc.
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ST. LOUIS: Hammond Sheet Metal Co.
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• DISTRIBUTORS: Some desirable territory still available. Write today.

Meets Government specifications and while the government is taking a large part of our production we still have plenty of material available for maintenance and repair. Consult your nearest distributor about new low priority requirements. He carries Cheney Metal products in car-load quantities.

CHENEY METAL PRODUCTS CO.
Trenton, New Jersey

**THIS WILL HIT
US HARD, JIM!**



**"I DON'T THINK SO, AL. WE'LL
GET ANOTHER LOCKFORMER."**



One man and a Lock-
former can make
more Pittsburgh
Locks than sixteen
men working at
eight brakes.

*Write for catalog
showing complete
Lockformer line.*

The LOCKFORMER Co.
4617 ARTHINGTON STREET, CHICAGO, ILLINOIS

With the Manufacturers . . .

Grant Wilson Moves St. Louis Office

Grant Wilson, Incorporated, 4101 W. Taylor St., Chicago, announces that the St. Louis office has moved to 1627 Locust Street—Advertising Building—with increased facilities which will enable an extension of service to the St. Louis area. Telephone number is Chestnut 1910. Mel A. Jackson is District Manager.

Grant Totten Company Sold

C. E. "Jim" Wilcox, well known in the National Warm Air Heating and Air Conditioning Association, announces the sale of The Grant Totten Company of Canton, Ohio, wholesalers of warm air heating equipment, sheet metals and roofing supplies, to Homer Cunningham, former Ohio Sales Manager for Henry Furnace and Foundry Company. Mr. Wilcox's future plans are still in doubt.

Mr. Cunningham pledges the same service to all dealers and contractors as rendered by the former owner.

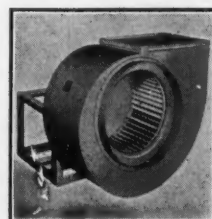
Sheetlock Furnished Jobber on PD-1X

Sheet Lock Company, 4521 N. Clark Street, Chicago, has been advised by WPB that Sheetlock jobbers may distribute Sheetlock strip to dealers without the dealer furnishing the jobbers with any priority rating. The jobber, however, must furnish to the Sheetlock Company a rating according to jobber's application PD-1X.

This sale of Sheetlock strip by the dealer and the obtaining of the strip from the jobber without priority is in accordance with CMP Regulation No. 4, which permits jobbers to sell a certain poundage of certain materials to the dealers without rating. In this particular case, the dealer can probably purchase 6,000 pounds of Sheetlock per quarter without rating.

YOUR BLOWER Requirements

AVAILABLE AT
Schwitzer-Cummins Company



★ BLOWERS FOR EVERY PURPOSE

Double Inlet and Single Inlet

HY-DUTY Blowers, 9 3/4" to 25" • Top and Bottom Horizontal, and Top and Bottom Vertical Discharge • Top and Bottom

Motor Mounting • Dual Units also available.

★ **CENTER DISC WHEEL**—Double Inlet, Double Width • Reinforced Center Disc • Designed for Modern Air Conditioning and Heating Applications • Sizes, 4 1/2" to 50".



★ **ENGINEERING DATA**—Write for Catalogues showing complete Performance Data • Experienced Engineering Department available to help solve your Air Handling Problems.

BLOWER DIVISION
SCHWITZER-CUMMINS COMPANY
1145 EAST 22ND STREET INDIANAPOLIS, U. S. A.

Stok

The St. organized manufact consist of ing comm ciation, w

Govern postwar other phar life. Stok der the a called by problems stoker pr manufact

Frank well Corp Wm. G. B manufact

James charge of Corporati engineer. Chrysler of years, refrigerat

Fred W Honeywell died on Fe Balderson company f daughter.

H&C



No. 80 1/2



**HART
HOLLAND**

Stoker Postwar Planning Committee

The Stoker Manufacturers' Association, Chicago, has organized a Postwar Planning Committee for the stoker manufacturing industry, the membership of which will consist of the chairmen of each of the association's standing committees. J. M. McClintock, president of the association, will head the new postwar stoker committee.

Government agencies are giving great consideration to postwar plans in housing, heating, city planning, and other phases involving every feature of American economic life. Stoker Industry Advisory Committee organized under the authority of the War Production Board meets as called by the War Production Board and considers only problems related directly to the war effort involving stoker production, WPB regulations, fuel supplies, and manufacturing and material "bottlenecks."

Personal

Frank X. Marzolf, formerly with Minneapolis-Honeywell Corporation has been appointed to the personnel of Wm. G. Boales & Associates, 6429 Hamilton Ave., Detroit, manufacturers' representatives.

James R. McCallum has joined the engineering staff in charge of the laboratory of Airtemp Division, Chrysler Corporation, Dayton, according to Allen P. Livar, chief engineer. Mr. McCallum has been associated with the Chrysler Corporation laboratories in Detroit for a number of years, where he has specialized in the development of refrigeration and heat transfer equipment.

Fred W. Balderson, office manager of the Minneapolis-Honeywell Regulator Company's branch at Philadelphia, died on February 20 after an illness of three months. Mr. Balderson, who was 32 years old and had been with the company for 12 years, is survived by his widow and infant daughter.

H&C DAMPER REGULATOR SETS



No. 40 1/4 S

ECONOMY TYPE. Three ways to install: 1. With lock nut but without handle (for tamper-proof setting). 2. With handle and lock nut. 3. With handle and wing nut. Nut prevents damper vibration. Handle always indicates position of damper (Patent 2,146,142). Furnished with handy snap end bearing. Complete set in carton. Made only with 1/4" bearings.

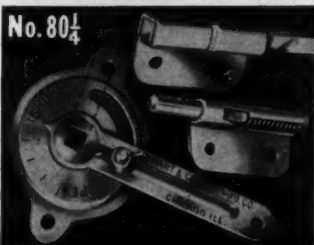
LIST PRICE.....No. 40 1/4 S.....\$0.30



No. 50 1/4

BRACKET TYPE. Nut holds damper securely, preventing vibration. Handle which indicates position of damper, may be left in place permanently or removed after adjustment (to prevent tampering). Snap End Bearing on 1/4" size, Solid End Bearing on 3/8" size. Each set individually packaged.

LIST PRICES.....No. 50 1/4.....\$0.40
No. 50 3/8.....\$0.60



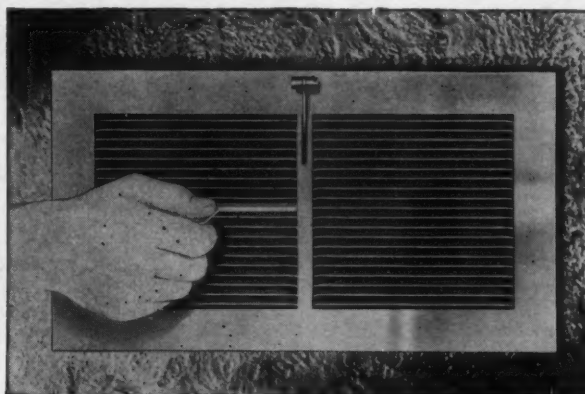
No. 80 1/4

DISK TYPE. Like all H&C sets, this set is equally adaptable to splitter or regular dampers. Snap End Bearing on 1/4" size, Solid End Bearing on 3/8" size. All parts are rust proofed. Complete set in carton.

LIST PRICES.....No. 80 1/4.....\$0.40
No. 80 3/8.....\$0.60

See your jobber or write for literature and sample.

HART & COOLEY MANUFACTURING CO.
HOLLAND, MICH. • PHILADELPHIA OFFICE: 1600 ARCH ST.



H&C No. 741—The low-cost, quality-built Air Conditioning Register

H & C REGISTER STOCK IN GOOD SHAPE

Considering the restrictions imposed by war-time regulations, we believe we can justly state that our stock of registers is in good shape. In general, we have a well-assorted stock of registers for all types of installations.

In some instances minor substitutions may be suggested, but, taken as a whole, stock is in very good assortment.

Hence, your orders will be greatly appreciated, as always, and we will spare no effort to be as helpful as possible.

Current catalog of the complete line is No. 42.



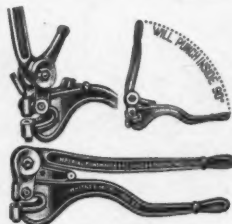
HART & COOLEY MANUFACTURING CO.
World's Largest Manufacturers of
Registers, Grilles, Furnace Accessories
HOLLAND • MICHIGAN

WHITNEY-JENSEN PRODUCTS

30 YEARS EXPERIENCE

Nos. 7, 7½, 8 — Imperial ROLLER BEARING PUNCHES

Improved lever-type eccentric-action punches made easy-working by roller bearings. Will punch and strip positively inside 90° for quick, clean, accurate work.



Easy to change punches and dies. Capacities: (No. 7) ¼" hole in ½" iron; (No. 7½) ¼" hole in 3/16" iron; (No. 8 Imperial) ¼" hole in ¼" iron.

No. 5 Jr. PUNCH KIT

A light, handy, useful, powerful, durable punch, now furnished in a metal kit box complete with 7 punches and dies in no-lose-out holder.



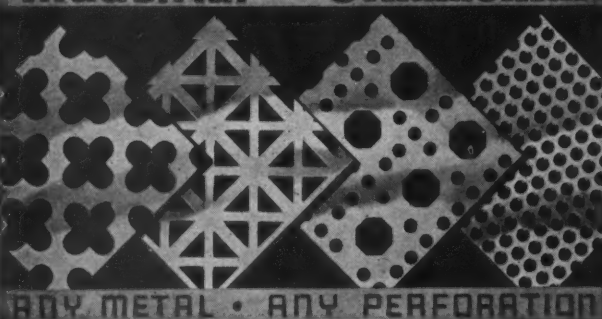
Write for
Whitney-JENSEN
Aircraft Tools Catalog

Capacity ¼" hole in 16 ga. iron. Will punch in center of 3" disc. Weight only 2½ lbs. A popular favorite for years in busy metal shops the world over.

WHITNEY METAL TOOL COMPANY
91 FORBES ST. • ROCKFORD, ILL.

PERFORATED METALS

Industrial and Ornamental



Industrial Perforations include all sizes of round, oblong, and many special shaped perforations, for Screening, Grading, Draining and Guarding purposes. Our line is very complete.

Ornamental Perforations are used in Architectural Grilles, Radiator Enclosures, Metal Furniture, Cabinets, Stoves, etc. In addition to the standard shapes we have many exclusive and attractive designs suitable for different uses.

H&K workmanship is unsurpassed.
Write for prices and other information.

The Harrington & King
PERFORATING CO.

5849 Fillmore St., Chicago, Ill.

New York Office, 114 Liberty St.

New Fuel Oil Rationing Program

(Continued from page 43)

for period two valid during period three and so forth.

Coupons for periods two and three will be made valid simultaneously in the 13 Middle Western States. Likewise, periods four and five will be similarly telescoped. The net effect of combining validity dates will be to reduce the number of heating periods in the Middle West to three.

Reserve Coupons

An additional feature of the simplified plan will be the issuance of consumer reserve coupons. These coupons will be attached to the coupon sheet, will have an aggregate value equal to about one-sixth of the individual's heating ration and will be valid for purchases anytime during the heating year. The other five-sixths of the ration will be composed of "indefinite value" coupons for specific heating periods and "definite value" or change-maker coupons, which remain valid for the entire year.

The reserve coupons and coupons for period one will be made valid July 1 and will be used by the consumer (along with any period five coupons remaining from the present ration) to "pay for" deliveries this summer. The coupons which the consumer may use starting July 1 will represent more than one-third of the total ration.

Individuals should use their period one coupons together with the period five remaining from the present ration, for filling tanks this summer, keeping their reserve coupons—which may be used anytime—as a cushion for use later in the winter. However, if a householder's storage capacity is larger than the value of his number 1 coupons he should fill up the tank by cashing in a part of the inventory coupons.

The OPA emphasized that the oil a consumer purchases this summer with his new coupons is a start of his next heating years ration—that is, for the period from October 1, 1943, to September 30, 1944—and should not be consumed for hot water or other purposes during the summer.

Books Redesigned

The coupon sheets themselves have been redesigned and assigned unit values more convenient for the typical delivery of the various classes of consumer. The average householder will be issued indefinite value coupons with a normal value of 50 gallons, as against a 10 gallon normal value as at present. Coupons of this value, which are to be issued on what will be known as a class 5 sheet, will be used by consumers whose total rations run from 600 to 4,000 gallons, and who can buy more than 50 gallons at a time.

Individuals holding rations for between 4,000 and 20,000 gallons will receive coupons worth 25 units, or 250 gallons when the unit is worth 10 gallons. One-unit value coupons normally worth 10 gallons, will be used for the smaller class of consumers who purchase less than 50 gallons at a time.

For rations of more than 20,000 gallons—whether for heating or non-heating purposes—certificates to be deposited in ration banking accounts will be issued. Thus, the use of coupons will be eliminated entirely for this group.

In addition, all primary suppliers and secondary suppliers as well as dealers whose volume is above an as yet undetermined amount, will use the rationing banking system.

Temporary Dies and Fixtures

(Continued from page 58)

fashion by using one of the raised bottoms and one of the band iron rings or, for that matter, one of the finished covers. We insert a loosely threaded nipple through the hole in the cover, welding it on the outside of the cover. We weld a band to the edge of the flange, the band sliding easily over the cover and tank flanges aligned one on top of the other and tacked by solder, just enough to hold the two flanges together while the holes are drilled through them. The holes in the drill jig flange must be laid out carefully and spaced uniformly so that they will correspond one with the other when the cover is turned around. The holes in the drill jig probably should be drilled first with a small size drill, bringing the hole to its $\frac{1}{4}$ -inch dimension by a succession of drills of smaller diameters. The final dimension should be obtained by a reamer. A cold rolled steel band, formed to correspond with the iron band, will guarantee more accuracy in the drilling of holes. Such a steel ring might then be tack-welded on top of the cover flange.

For bushings to guide the drilling we use pieces of cold rolled steel, cyanide hardened. A $\frac{1}{4}$ by 1-inch cold rolled stock will suffice. We drill the holes in the stock before cutting it up into pieces. Here also we use a succession of smaller drills up to $\frac{7}{32}$ inch. Then we cut the stock into $1\frac{3}{8}$ inch long pieces, make them level (in the press brake possibly), and finish the hole to its $\frac{1}{4}$ inch drill size by drilling with a $\frac{15}{64}$ inch drill and $\frac{1}{4}$ inch reamer. Removing any burrs from the stock, we then are ready for cyanide-processing them. The cyanide cakes are melted and kept in molten state in a not too large pan or dish. The bushings should be heated up to a trace of yellow in the fire pot (soldering or other such heat-treat oven). The piece of stock should be heated uniformly all over before dipping it in the molten cyanide. A tong must be used to hold the stock in the cyanide for about 5 seconds, dipping it then in cold water.

These bushings are arc welded to the edges of the band, not to the surface of it, as too much heat applied in welding would destroy the hardness of the bushing metal. Two good tacks connecting the edges of the two metals are sufficient. For locating the bushings we use $\frac{1}{4}$ inch drill rod, inserting the bushing over the rod and then pushing the rod through the hole in the flange. The best locating results are obtained by using a longer rod provided with a head, this head resting flat on the bushing, the weight of the rod pressing the bushing down. The larger the head above the hole in the bushing the better it is, because the head absorbs much of the heat from the weld and protects the hardness of the metal about the hole.

ATH-A-NOR

FURNACE
REPAIR
PARTS

COMBINE
QUALITY
EFFICIENCY



Ath-A-Nor Furnaces manufactured by the May-Fiebeger Company for the past 50 years have proved their ability as economical and efficient heating plants in thousands of homes throughout the country.

In these days of conservation, you should check all furnaces. Replace all parts that impair efficiency, and make certain that they operate perfectly. When ordering repair parts for Ath-A-Nor furnaces order them from May-Fiebeger. They will operate as efficiently as the original parts and assure longest wear. Remember . . . Ath-A-Nor Furnaces for the "MUST" replacements . . . and Ath-A-Nor Repair Parts for easiest installation and highest efficiency.

MANUFACTURERS OF QUALITY HEATING EQUIPMENT FOR OVER 50 YEARS

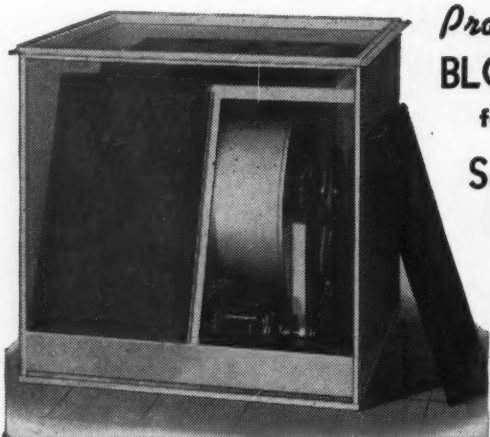
MAY-FIEBEGER COMPANY
NEWARK OHIO



DISTINCTIVE FEATURES — The soft steel blades are made in pairs, pressed thru slots in the heavy steel back plate, then welded to the plate. The blade tips are pressed thru slots in the inlet disc then bent back against the spring of the steel blades. This patented construction results in an exceptionally rigid wheel and prevents loose blades, as no rivets are used in fastening the blades. The heavy cast iron machined hub is riveted to the back plate and will not crack or become loose on the shaft.

Janette

Janette Manufacturing Co. 556-558 W. Monroe St. Chicago, Ill.



Properaire BLOWERS

for your
Summer
Business

★
Silent
Positive
Dependable
Correct
Design
Best
Construction

Unit 2000 Series—Insulated Cabinet Package

● Quick delivery can now be had on a wide variety of types of blowers, from 6 to 16 inch wheel size, for air-conditioning, ventilating, exhaust and other air-moving purposes. Package units in cabinets, with or without insulation.

● A recent consolidation* greatly increased our facilities, equipment and trained personnel, improving our ability to serve you quickly.

Send for Literature on our Complete Line

GRAND RAPIDS DIE AND TOOL CO.

329 Scribner Ave., N. W. — Grand Rapids, Mich.

*Now a division of EXPERT DIE & STAMPING CO.

Swartwout ROOF VENTILATORS

Industry's Standard
for 36 Years

Swartwout has constantly developed new types and refinements to increase roof ventilation flexibility. Swartwout Ventilators have been proved on all types of war construction and war-industry buildings. Two lines — of metal, and of non-critical materials — give you wide choice in solving any kind of roof ventilating problem.



Send for these two comprehensive Bulletins describing Swartwout Roof Ventilators.

The Swartwout Co.
18511 Euclid Ave. Cleveland, Ohio



Swartwout VENTILATION
SPECIALISTS

After each weld-tack cold water should be applied to the bushing.

As noted above, the cover is aligned over the tank flange and the two flanges are tack soldered to hold them together while the hole drilling is being done. Shaving off the flange edges in the rig-up shown in Drawing No. 9 has brought the two flanges to an equal diameter and there is no difficulty in aligning them for above tacking. It is best to use a soldering torch for the tacking so as to leave no solder sticking to the flange edges, interfering with the drill jig sliding over them. But not too much heat should be used on the flanges, warping them! A number of small clamps will hold the drill jig in position during the drilling operation. If we can mount a small drill press high enough to do the drilling in a vertical position, rotating the tank, all the better, because the use of an electric hand drill, especially one wiggling too much, would quickly damage the bushings.

The shop-constructed tools and fixtures shown in the drawings and explained in this text apply primarily to the manufacture of the Marine Tank, but the rig-ups might be imitated for other work requiring one or more of the processes discussed here. This especially applies to hole punching dies operated in the press brake and forming dies so operated. And although heavy stamping work should not be attempted in the press brake, there are hundreds of items which can be so processed.

Only \$2.00 for This Outstanding Book on Air Conditioning

THIRD EDITION

AIR CONDITIONING FOR COMFORT

By Samuel R. Lewis

288 Pages — 6½ x 9½ — Cloth Bound

Easy to understand . . . accurate . . . comprehensive . . . these are the features of this third edition of Samuel R. Lewis' well-known **AIR CONDITIONING FOR COMFORT**. More than 70% of the text in this third edition is entirely new, as are dozens of the illustrations, charts, tables, and designing examples.

Fundamentals are fully and clearly covered in this volume, as are the newest air conditioning methods and equipment. Correct procedure in designing complete systems for both residences and large buildings is explained step by step from the standpoint of newest practice. In addition, considerable original data on such comparatively new subjects as standards, noise control, measurements, and fire protection codes has been included.

Send \$2.00 for a copy today to the address below. We know you will consider this one of the finest air conditioning books you have yet seen, but if you should be dissatisfied with it for any reason whatever, your money will be promptly returned to you.

KEENEY PUBLISHING COMPANY

6 N. Michigan Avenue

Chicago, Ill.

Kruckman— Furnaces Under CMP

(Continued from page 31)

because there is in all the Congress a very honest and sincere desire to establish an agency, on behalf of the civilian, which may check the encroachments upon civilian needs and privileges by the armed forces. Congress apparently feels that inherent in the drift of affairs is the threat of a totalitarian control that might develop into far more serious results than any one at present would assume or intend.

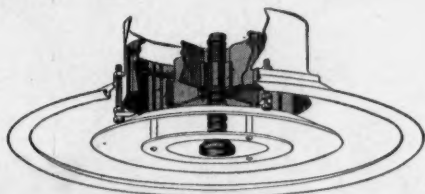
Congress Fears Intent of Bill

On the other hand there is considerable uncertainty in some minds in the House of Representatives about the intent of the Bill so far as the New Dealers are concerned. There is some fear that the effort to establish a vast system of factories and warehouses and retail distributing of all kinds may be the index to the sweeping plan to establish a New Deal throughout the whole world. This plan is openly discussed here, and is regarded as the pattern by which our system of life may be the controlling influence of the world's sociology and economy. Obviously this system would involve tight controls of all kinds, and would, in essence, be analogous to any other plan that involves tight controls. It is quite possible therefore that the Civilian Supply bill may pass the Senate smoothly, but may have much harder going in the House where the real implications, connotations, and denotations may clearly come into the light.

KNO-DRAFT K-NEWS

USING CONDITIONED AIR MOST EFFICIENTLY

Effective Air Diffusion is as important as any other function of air conditioning—and effective diffusion is insured with the KNO-DRAFT* type W-A-R Adjustable Ceiling Diffuser equipped with type DEE Volume Control.



Cutaway diagram of KNO-DRAFT* Air Diffuser
equipped with Type DEE Air Volume Control
Patents Pending

This Unit provides draftless, noiseless, uniform air diffusion, thorough air mixing, room temperature equalization, greater air volume with lower resistance. Most important—both the air *direction* and the air *volume* are adjustable. Descriptive Folder L on request.

*Formerly known as Dorex KNO-Draft Air Diffuser



W. B. CONNOR ENGINEERING CORP.
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CONTRACTORS ATTENTION!

Don't overlook this profitable source of business, right in your own locality.

Vitroliner Pipe is designed for lining Masonry Chimneys, especially desirable for oil or gas fired units, where condensation (an acid bearing moisture) is absorbed by brick and mortar after coming in contact with the cold walls of the flue. These acids weaken the structure and cause gradual destruction of the chimney. VITROLINER CHIMNEY LINING not only gives positive protection but also improves the chimney draft.

Manufactured from heavy gauge Armco enameling stock iron. Completely covered with an acid-resisting vitreous enamel.

Ample stocks on hand. Available on low priority (A 10).

"14 years of practical experience in the field".

Write for further information and literature to

CONDENSATION ENGINEERING CORPORATION

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You can UP production ...even with unskilled labor

MODEL 1236
36-in. Throat
12-Gauge Capacity

Libert ^{Hi-Speed} SHEAR

From almost any material—steel, stainless steel, brass, aluminum, metal screen, fiber, paper products—even an unskilled worker soon learns to cut intricate combinations of circles, angles, and curves, *rapidly, accurately, cleanly*. A Libert Shear does *not* nibble. Edges are smooth, need no finishing. Inside cuts are no harder than outside, whether it's flat sheets or formed work. No starting holes are necessary. *Write for Bulletin.*

Made in sizes up to 60-in. throat, 10-gauge capacity

LIBERT MACHINE COMPANY
Green Bay, Wisconsin

**"We Do a Nice
Volume Now—Thanks
to CLARAGE
EQUIPMENT"**



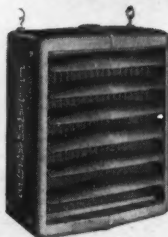
War plants, army barracks and other vital war-time buildings need heating and ventilating, or exhaust and blow pipe installations. This high priority business can be your salvation. Specify Clarage Fans, Blowers, Unit Heaters! Nationally known and Nationally accepted, these highest quality air-handling products help you land the desirable jobs. Write today for descriptive literature.



EXHAUST FANS



VENTILATING FANS



UNIT HEATERS

COMPLETE
AIR CONDITIONING
• COOLING
• VENTILATION
• FACTORY HEATING
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FANS and BLOWERS
for INDUSTRIAL NEEDS

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Sell STREEKNO AIR REGISTER PACKING



STREEKNO Packing Seals all the Open Joints on all Sides and Bottom of the Register

STREEKNO is just what your customers are seeking . . . for its installation on warm air and air conditioning registers eliminates dirty, streaky walls due to air seepage through open joints around the Register Box and the Plaster Wall—Open joints between the Register Box and the Register—Joints between the Register itself and the Plaster Wall—Also open spaces under the Register along the floor. STREEKNO is designed to permanently seal these "Wall-Streakers" and once installed will last as long as the building stands. It is fire-proof—rot-proof—

Does not shrink or deteriorate—Vermine and termite-proof—and FITS ANY REGISTER. STREEKNO is simple to install—all you need is a screwdriver. Each register in a home can be STREEKNOTIZED in a maximum of ten minutes.

A STREEKNO installation costs the home-owner only \$2.00 per register . . . but saves hundreds. STREEKNO can be bought by you in two ways. Bulk shipping case contains 12 sets of STREEKNO in BULK and one easled display box or all 12 sets boxed, one with easel. Price for either case \$6.60. Send for your trial order NOW—use the coupon on bottom.

EXCEL HEATING & AIR CONDITIONING CO.
3715-19 Belmont Avenue, Chicago, Ill.

SEND THIS ORDER TO YOUR JOBBER!

Send me trial order of STREEKNO ☐ Bulk — ☐ Packaged as advertised by Excel Heating and Air Conditioning Co., Chicago, in the May issue of AMERICAN ARTISAN. Price \$6.60 per case.

Name

Address

City..... State.....

Weiner has been one of the most powerful champions of the Bill. He made a splendid presentation of the needs of the civilian. By and large he almost completely reversed his former insistence upon the doctrine of scarcity for the civilian. He told the Senate Committee the civilian needed not only more basic materials to maintain his collapsing economy, but he needed to be assured of more manpower to run his services and his plants and his distributing centers, and he needed more transportation facilities. If Weiner's earlier championship of scarcity, and of a tightly concentrated economy and society, had not made such a deep impression, the power of his recent appeal would have been one of the most notable contributions to the expositions of the War.

A really magnificent analysis, probably sincere, was a complete dud. No one had full confidence in it, probably not even the White House. The White House, however, thoroughly favored the Bill, The Senate Floor Leader came out for it with everything he had to give, and the Speaker of the House endorsed it strongly. Economic Stabilizer Byrnes gave it complete support. It is unmitigatedly a White House measure. There is no remote doubt the President hopes it will be enacted into law.

Nelson's Enigma

Obviously this makes Donald Nelson's bitter, slashing, stubborn opposition to it so startling. There is no doubt that Nelson does NOT want the civilian non-essential consumer to have an agency to take care of his needs. And there is no doubt the Army-Navy does NOT want an agency to defend and support the needs of the civilian. They make no bones about it. They regard this as a total war, the first total war in human experience, and they sincerely feel a total war must

A REAL Time Saver



The No. 4B PUNCH by Whitney

This punch is accepted by leading contractors and dealers as a real time-saver in the shop and on the job. Men who use it every day know it can't be beat for clean, fast punching. Has a capacity of 1/4" through 16 ga. weight 3 pounds, 8 1/2" in length, depth of throat, 2". Complete tool includes three punches and three dies of specified sizes with die adjusting key.

W. A. WHITNEY MFG. CO.
636 RACE ST. ROCKFORD, ILL.

be supported by a total war machine. They honestly cannot understand how you can fight this total war without completely subordinating all civilian privileges and needs to the paramount needs of the Army and Navy. There is little doubt both the Congress and the civilians, as a whole, would go along with the armed services, if there were not the fear that complete subordination of civilian needs might introduce a condition that might jell the whole system of our life into something that might be perilously close to fascism. The curious feature of the almost unwitting liaison between Nelson and the Army-Navy is the fact that Nelson just recently was violently in conflict with the Army-Navy. He fired Eberstadt because he was determined to eliminate Army-Navy domination.

It is rather difficult to figure out Nelson's place in the picture, at present. In this fight over Eberstadt he had the support of a very strong, dominant, and influential section of the Congress. In this fight he has the support of the Army-Navy, but this support is scarcely based on confidence, enthusiasm, or any of the usual elements that make a sound background. The support is an expediency. Nelson enlisted the support of the U. S. Chamber of Commerce in his fight against the Civilian Supply Bill. He enlisted the support of other trade organizations. It is said he even had the support of both the A. F. of L., and the C. I. O. It may be reasonable to assume he has the support of the great industrial combinations represented strongly and in great numbers in WPB. But he is at odds with the New Dealers, the men and women who were his staunch friends when he and Henderson were so close. And he is clearly on the outs with the White House. He could not fight its ideas more openly than he is fighting them now.



No. 18
Hand
Power

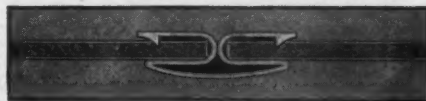
★
CUT ANY SHAPE
★
CUT ANY SIZE SHEET
★
SIZES FROM 18
GAUGE TO 1/2".

**MARSHALLTOWN
THROATLESS SHEARS**

Here's just the Shear that offers every feature you want. It does hundreds of odd shearing jobs better and faster—yet is an inexpensive hand operated tool. Send at once for Shear Bulletin. It gives all details of the Marshalltown line of sizes from 18 gauge to 1/2 inch capacity.

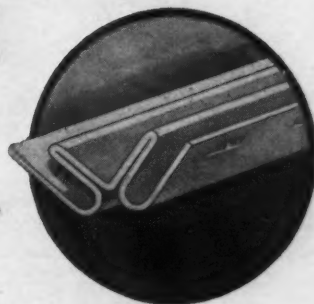
MARSHALLTOWN MFG. COMPANY
920 Nevada Street, Marshalltown, Iowa

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SHEETLOCK

**THE SELF-
FASTENING STRIP**



Pays for itself in labor saved!

Sheetlock is the greatest labor- and time-saving way of joining sheet boards . . . no tools . . . no holes to drill . . . simply push the board into the channel of Sheetlock and it locks firmly and securely.

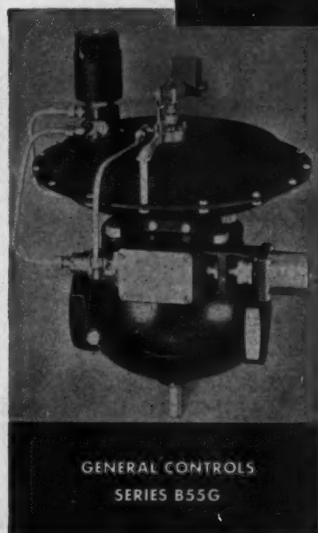
**Jobbers can sell you Sheet-
lock WITHOUT A PRIORITY.**

Send for Samples and Literature NOW!

SHEETLOCK COMPANY
4521 No. Clark Street, Chicago

NEW

**GENERAL CONTROLS
COMBUSTION CONTROL**



GENERAL CONTROLS
SERIES B55G

The B-55-G Slow Opening Diaphragm Gas Valve is electrically piloted, and additionally acts to maintain a constant steam pressure at all times by throttling the gas flow and secondary air in direct proportion. The operating principle of the B-55-G is the same as the conventional type B-55 diaphragm operated fuel supply valve, with the additional feature of the governor, which regulates the fuel supply to the burner in direct relation to the steam pressure and eliminates the undesirable "hunting aspect" which is common to most throttling valves. Sizes 1" to 6" I.P.S. WRITE FOR NEW CATALOG No. 52 containing complete specifications.



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Branch Offices: Boston • New York • Philadelphia •
Cleveland • Detroit • Chicago • Denver • Dallas • San Francisco

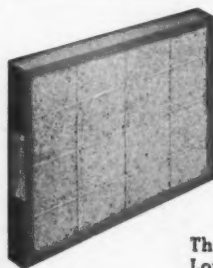
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VERNOIS FURNACES, made of Vernalloy, the toughest cast iron, have exceptional lasting qualities . . . but occasional repairs keep them at peak efficiency. When you repair Vernois Furnaces order your parts direct from Mt. Vernon to assure perfect fit and greatest efficiency.

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FURNACE
& MFG. CO.**

Vernois

- MT. VERNON
- ILLINOIS



AXIOM AIR FILTER

The result of fifteen years experience
Lower in cost — Higher in quality
Huge dust capacity—low resistance
Prompt delivery assured
Order now

BLOCKSOM & COMPANY, MICHIGAN CITY, INDIANA

*For Balanced
Atmosphere.*



AUTOMATIC HUMIDIFIER CO. Cedar Falls, Iowa

No. O. A. LITTLE BLACKSMITH

SPECIAL LOW PRICE - \$36.00

NO PRIORITY NEEDED

Capacity—Punch $\frac{1}{4}$ "x3/16"

Shear $\frac{3}{16}$ "x1 $\frac{1}{2}$ "

Bend $\frac{1}{8}$ "x1 $\frac{1}{4}$ "

Punches holes up to 13/32". On larger sizes Punches, Shears, Angle Shears and Notchers priority is necessary.

J. F. KIDDER MFG. CO., INC.

372 COLCHESTER AVE.
BURLINGTON, VT.



BARBER BURNERS

For ALL Gas Appliances



S-80



Z-21

Our facilities are now mainly employed on war work. For those limited purposes for which our regular line of products is permitted, we shall continue to supply them. Later, when normal conditions are restored, Barber will furnish its customary service to the trade on high quality Burners and Regulators.

Latest Catalog on Request

THE BARBER GAS BURNER CO.
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BB

HOOKS & HANGERS



Wood Hook

THRU
LEADING
JOBBER
EVERYWHERE



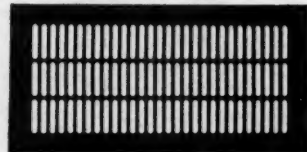
No. 9

BERGER BROTHERS CO.

Main Office & Factory
229-237 Arch St., Philadelphia, Pa.

USE AUER SERVICE

Auer registers and grilles can only be furnished subject to present Federal restrictions. We are also equipped for stamping and fabricating other products of sheet metal. Our facilities are for perforation, forming, assembling, welding, and enameling in gauges 10 to 24. Inquiries invited.



Auer Register Book sent on request

THE AUER REGISTER COMPANY, Cleveland, O.

AUER REGISTERS

& GRILLES - For Air Conditioning and Gravity

SPOT WELD

WITH AN

ACME "Hot Spot" WELDER

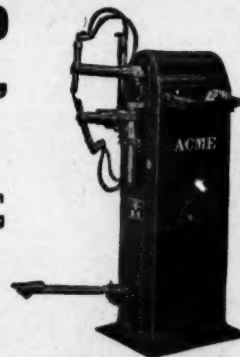
Proven utility for over 26 years in thousands of sheet metal fabricating plants.

Write for Literature and Prices.

Complete Range of Sizes

Lifetime Guarantee!

ACME ELECTRIC WELDER CO.
2618B Fruitland Road
Los Angeles, Calif.



Radiant Energy Drying

(Continued from page 61)

the 275°F point and rapidly attain a temperature of over 400°F, which would boil or burn the finish.

In other words, the tunnel should be designed for a watts density at the object designed to bring the object to a temperature of 275°F as quickly as the nature of the finish will permit, and then continue at this temperature for the required baking interval. Either that or the object may be quickly withdrawn from the tunnel on reaching the baking temperature set by the

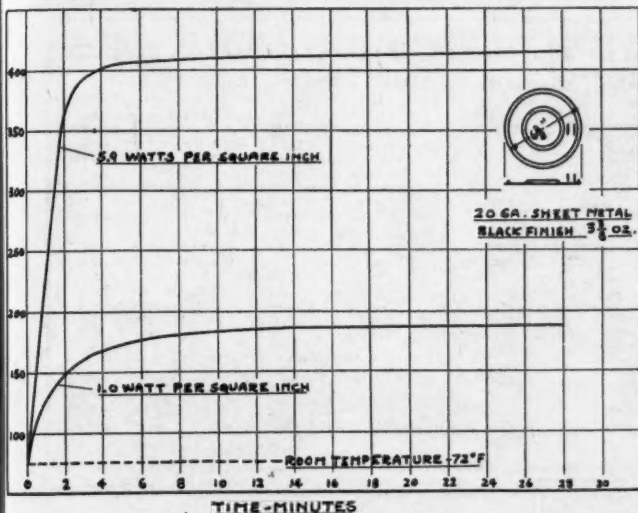


Illustration No. 9—Temperature for baking is determined by the paint formula. Too low (distant lamps) or too intense (close lamps) may not bake or may burn the finish. Follow paint temperature specifications.

paint manufacturer and the baking completed by natural cooling. For this reason, the designer of tunnels is as much or more concerned with watts per square inch as he is with surface temperature.

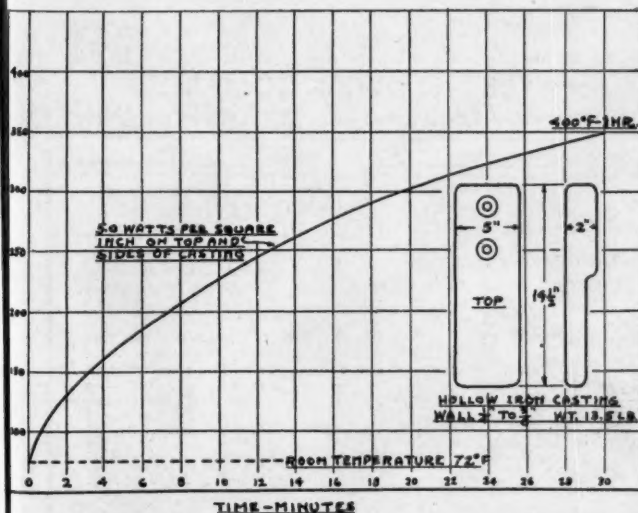


Illustration No. 10—Castings often can be baked quickest by carrying a high temperature at the entrance end of the tunnel with lower temperatures toward the exist end of the tunnel.

Use THESE



"DUST-STOP" SELLING HELPS from BRAUER

To co-operate with the trade in our market area in these trying times, when normal work is curtailed, we have made available a fine array of sales-building material, as prepared to help you carry on a normal business, by the makers of Dust-Stop furnace filters.

A striking array of mailing pieces, follow-up postals, a fine 10-piece Filter display for window or store are all yours for the asking. Its use not only uncovers the profitable old house work for you, but lets you get the benefit of Dust-Stop's smashing radio and publication program.



Be sure to have this Dust-Stop Filter Catalog on hand—Send for your copy today. Lists filter sizes for most furnaces and air conditioning systems. Makes telephone, counter and mail sales easy to handle without time wasting preliminary inspection trips.

We will continue to render you in 1943 a fine service on repair parts for all Furnaces, Boilers and Stoves.

A. G. BRAUER SUPPLY COMPANY
2100 Washington Blvd. St. Louis, Mo.



CAN'T GET 'EM UP in the morning!

It's those luxuriously comfortable beds at all
DeWITT OPERATED HOTELS

In Cleveland HOTEL HOLLENDEN In Columbus NEIL HOUSE
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WISS "METAL MASTER"



Compound Action AVIATION SNIPS

Used extensively by leading aviation and metal working industries, and in U. S. Government Plants throughout the country.

- Cuts circles, squares and irregular patterns on Stainless, Dural, and Monel Metals with ease.
 - All Parts interchangeable.
 - M1 for cutting left—M2 for cutting right.
- WISS BULLDOG AND STANDARD PATTERN SNIPS are used in Shipyards, on Government construction projects, and on maintenance work wherever sheet metal is required.

Send for literature of complete line
J. WISS & SONS CO.

ESTABLISHED 1848

NEWARK, N. J.

FURNACE REPAIR PARTS For All Makes Now Available

With priorities restricting sales of new equipment, repair business is more essential than ever. Furnace dealers can still depend upon prompt deliveries of repair parts for ALL MAKES AND AGES of furnaces. Get the repair business now and you'll be all set to get the new jobs after the war. Send in your orders now, while stock is available for immediate delivery.

PEERLESS FOUNDRY CO.

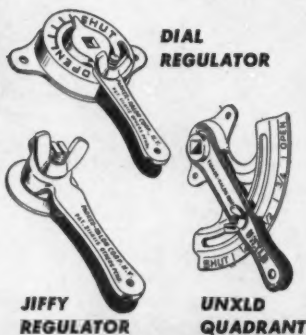
1855 LUDLOW AVENUE

INDIANAPOLIS, IND.

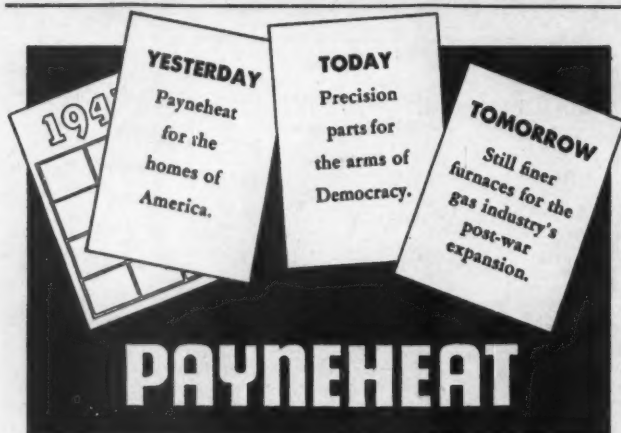
Pioneers in Warm Air Heating Equipment for over a third of a century.

A Type And Size For Every Need

For efficiently controlling light and medium dampers in heating, ventilating and air conditioning systems, specify Parker-Kalon Damper Controls. The line includes all types and sizes, at a range of prices to fit the needs of any job. Parker-Kalon Corp., 190-192 Varick Street, New York.



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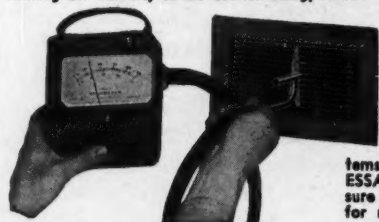


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Payne FURNACE & SUPPLY CO., INC., BEVERLY HILLS, CALIFORNIA

"ALNOR" VELOMETER DIRECT READING AIR VELOCITY METER

"Alnor" Velometer fills the need for a simple, accurate means of determining air velocity in air conditioning, forced air exhaust ducts, etc. Peak efficiency operation is now more important than ever before . . . and Velometer with its many simple attachments assures correct readings, under the most adverse conditions, in feet per minute, right on the scale! These readings enable you to gauge the systems efficiency and MAKE NECESSARY ADJUSTMENTS to assure greatest efficiency. Write for new catalog now!



Illinois Testing Laboratories Inc.

412 N. La Salle St., Chicago, Ill.

NEW LECTRO-SHEARS

Cut Metal, Faster, Easier



Black and Decker's new, redesigned Portable Lectro-Shears cut all types of sheet metal quickly, accurately . . . on a radius as small as $\frac{1}{8}$ ". Cutting operation always visible. New, improved operating handles provide better balance, easier control on curves and irregular lines. Cut up to rated capacity in steel, galvanized iron . . . 50% greater in non-ferrous metals. Ball-bearing equipped. Universal motor, designed for high speed, trouble-free service. Two sizes—18 and 16 gauge. No. 16 handle equipped with instant release trigger switch and locking pin for continuous operation. See your Black and Decker Distributor, or write direct to: The Black & Decker Mfg. Co., 783 Penna. Ave., Towson, Md.

Leading Distributors Everywhere Sell

Black & Decker

Portable Electric TOOLS



New and Improved "EX" Fans are now available in standard sizes from No. 15 to No. 80 and from 200 to 30,000 CFM Capacity with pressures up to 15" W.G. These fans are commonly used for exhaust problems to handle dust, fumes, shavings, etc., but can be adapted for forced draft service.

"EX" Fans are furnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies, thus "EX" Fans are ideal for resale purposes, as part of factory assembled units.

Std. Arr. No. 1 for Belt Drive

Write us about your problems. Send for Bulletin No. EX-41

BAYLEY BLOWER COMPANY

1817 South 66th Street

Milwaukee, Wis.

Write for
Catalog and
Prices

SPEED UP ORDERS

with a

BEVERLY SHEAR



Throatless shears that cut any shape . . . straight, circular or irregular. FASTER—no distortion! Precision—accuracy! Order No. 1 for 14 gauge. No. 2 for 10 gauge. No. 3 for 3/16 inch mild steel and 10 gauge stainless.

BEVERLY SHEAR CO
3009 W 110th Pl., Dept. 1
CHICAGO, ILL.

It is likely that later on tunnels will be graduated; that is, for many synthetic enamels there will be a high concentration of energy at the leading end, leveling off at the discharge end, whereas for wrinkle finishes (which are very popular), the reverse is usually desirable.

Infra-Red on Castings

So far in this particular discussion we have been dealing with thin metal objects which heat up quickly. There is the other type of work, shown in Illustration No. 10, namely, a casting which requires a relatively long time to reach the required baking temperature. This temperature (say 275°F) is ultimately reached by the tunnel, but at a rate which might be much slower than the production schedule called for. Therefore, it might be desirable to design the tunnel for a very high concentration of energy at the leading end, or in the form of a preheat, which would level off quite suddenly on reaching the required baking temperature. In the case of wrinkled finishes, however, this gradual temperature rise with castings under fixed watts per square inch is a factor of safety.

[Part 2 will follow]

Arnold Kruckman

Asks Some Help

THE Hopis, the Indians who live up in the bleak corner of Arizona near the Painted Desert, are a kindly and domestic people who normally support themselves by silversmithing, rug-weaving and by working on public construction jobs. The War has cut off their supplies of silver and wool, and has stopped construction. At best they live on a very scant margin. At present those who know them wonder how they manage to exist. Your Washington correspondent knows them well and has much affection for them. The Coyote Clan of the Hopis adopted him years ago. The other day he received a letter from his Hopi Indian sponsor-father, 73 years old. The dignified and kindly old man was injured months ago by a truck. He came out of the Government Hospital rather shaky and weakened. At Oraibi, the Lower Mesa, where he lives, he found his crops had suffered, and that it taxed his strength to drag thirty miles the wood he needed to keep warm during the hard winter ahead. And he needed clothes. So he wrote his sponsor-son in Washington and told him about it. He said a number of the members of the Coyote Clan also have had rough going the past year, and they need warm clothes. He suggested if Son Black Ear knew anybody who has some *old clothes* he would be glad if the word might be passed along to send them to Oraibi. So here, with the help of the Editor, I, Black Ear, pass along the word. If you have some old clothes you would like to send to my sponsor-father, mail them to Mr. Herbert Yestewa, Box 53, Oraibi, Arizona. Some aboriginal American up on those bleak mesas will be more comfortable by reason of your courtesy. I will be glad to reimburse you for the postage if you will let me know what it is.

Elgo Ventilating Specialties

Investigate This Automatic Shutter!

A shutter so perfectly counter-balanced that its louvers open the instant the fan starts, and close tight-shut when the fan stops. Easily adjustable for different air velocities. Weather-stripped on all sides, insuring a snug, tight fit. Sizes from 10" to 60" square—also rectangular.

Write for Catalog and Prices



"ELGO" TYPE
AUTOMATIC SHUTTER
Rear View (Closed)

Free
CATALOG

ELGO SHUTTER & MANUFACTURING CO.
6966 W. Jefferson
Detroit, Mich.

REPAIR PARTS

for any and all makes of

STOVES—FURNACES—BOILERS

Same Day Shipments

Also **MODERNAIRE** FURNACES

Fittings, Registers, Supplies

**DES MOINES
STOVE REPAIR CO.**

112 S.W. 2nd

Since 1869

DES MOINES, IOWA

Bremil PORTABLE SHEARS



Two Sizes

Your work will proceed faster and neater when you use Bremil Portable Shears on the job or in the shop. Write today for literature showing complete line.

ALL-ALLOY No. 2 cuts up to 1/4" steel plate.

ALL-ALLOY No. 1 cuts up to No. 11 gauge strip or sheet.

Special blades may be obtained for shearing stainless steel

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MONCRIEF FURNACES

For
REPLACEMENTS and DEFENSE HOUSING

★ Genuine Moncrief Repair Parts give the most satisfaction in every way ★

THE HENRY FURNACE & FOUNDRY COMPANY

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THE ONLY
100%
MERCURY SWITCH
EQUIPPED
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Hermetically sealed corrosion-proof Mercoird switches are approved by time and experience. They assure better performance and longer control life.

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FURNACES and WATER HEATERS



J. L. GILLEN CO.

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ROCK ISLAND REGISTERS and INTAKES

Two trade marks to remember when you want the height of efficiency, beauty and low cost combined in registers and intakes.

AIR-VANE



Dealers Net Estimating book, a time and money saver, sent free upon request.

★ **ROCK ISLAND REGISTER CO.** ★
ROCK ISLAND ILLINOIS

WHEN WAR REQUIREMENTS
ARE SATISFIED IT WILL
AGAIN BE

Syncromatic

COAL OR OIL
GRAVITY AND FORCED AIR
STEEL FURNACES

3373 No. Holton St., Milwaukee, Wis.



WAR TIME

Alco Valve Company, 865 Kingsland Ave., St. Louis, advises that four members of their organization are serving their country. They are:

George J. Boepple, former field engineer, New York Office, now Lieutenant (sg), U. S. Navy, Brooklyn Navy Yard.

Edwin E. Mattox, formerly in charge of the Repair Department, now a U. S. Marine private attending Quartermaster School, School Bn., Q.M.Q., T.C., Camp Elliott, San Diego.

Lester Ross, also in charge of the Repair Department before Ed. Mattox, is a Sergeant Major at the Station Hospital, Army Air Base, Walla Walla, Washington. (Medical Corps, not a patient.)

Jerome A. Stevens, formerly Order Department, is a Warrent Officer (Jg), Service Co., 138th Infantry, A.P.O. 944, c/o Postmaster, Seattle.

Carrier Corporation, Syracuse, N. Y., has 61 men from the home office, branches and on assignment with foreign distributors in the service of Army, Navy, Marine or Government.

The Carrier plant is about 99 per cent on war production for Army, Navy, Maritime and Lend-Lease contracts in addition to air conditioning, refrigeration and industrial heating. Special production on war equipment is being done both as a prime contractor and subcontractor. About 77 per cent of production is on standard products.

Employees are purchasing war bonds under special salary allotment plan in effect since the plan was announced by the Treasury Department. Former employees have seen service both on land and on the sea.

Carrier is conditioning and drying for munition plants manufacturing fuses and timers, black powder, incendiary and smoke bombs; conditioning machine shops and inspection rooms in factories; conditioning spaces where bomb sights and range finders are made; conditioning laboratories and cabinets for tests for personnel, instruments and materials at extremes of temperature and humidity and under controlled atmospheric conditions; humidification of textile mills making cloth for parachutes, uniforms and blankets; dehumidification of air to increase production of blast furnaces; cooling of mines; low temperature refrigeration for the manufacture of synthetic rubber, for the liquefaction of chlorine, and a variety of other manufacturing operations, and conditioning through centrifugal refrigeration of black-out plants.

All told, Carrier is producing 24 separate items that may not be classified as air conditioning, refrigeration or heating equipment.

More than ten thousand men and women workers of the Bridgeport Works of the General Electric Company, assembled in an outdoor mass meeting on March 26 to receive the Army-Navy "E" Award, solemnly repeated the following pledge to the men in the armed forces:

"I will never let you down. My life is in your hands. Your life is in my hands. I will work to make the best and the most of the things you must have to win—that we both may live—that our country may live—that Freedom for all may live."

The Erie Works of General Electric Company, Erie, Pa., has been awarded the Army-Navy "E" pennant with three stars.



CHOOSE:

BONDS or BONDAGE

Buy U. S. War Bonds



With manufacturing facilities converted 100% to War Production, our research department is devoted to designing improved units to be added after V day to the complete CONCO line.

CONCO

CORPORATION
Div. of H. D. Conkey & Co.
MENDOTA, ILLINOIS

TRADE NEWS ★

Clarence L. Hewitt, Jr., formerly Eastern district sales manager for the L. J. Mueller Furnace Company of Milwaukee, and now Commanding Officer of the Rattlesnake Bomber Base at Pyote, Texas, has been promoted to the rank of Lieutenant Colonel by the War Department.

A flyer in the first World War, Col. Hewitt was called to active duty in July, 1942. He took command of the huge 2nd Air Force Bomber Base at Pyote in October, 1942. Three months later, on January 5, 1943, he dispatched the first Flying Fortress, inaugurating the base's 24-hour-a-day flight program for heavy bombardment crews.

Col. Hewitt trained at Chanute Field, Ill., and Brooks Field, Texas, during the last war. He was stationed at old Eberts Field in Arkansas and Kelly Field, Texas.

His son, Clarence L. Hewitt, III, is at San Antonio Aviation Cadet Replacement Center awaiting assignment to a flying school.

Graduates from all types of Air Force schools are brought together in Pyote and welded into complete Flying Fortress crews. A number of crews make up a heavy bombardment group which will one day move as a unit—complete with Fortresses—into a theater of operations. The 2nd Air Force has the responsibility of putting into action the entire heavy bombardment program for this country. Col. Hewitt shares a part of this responsibility, the air base at Pyote being the largest bomber installation in the nation.

Spencer Heater Division, The Aviation Corporation, Williamsport, Penna., reports the following in service:

M. D. Vicchiarelli, Engineer.....	Army
H. D. Parsons, Sales.....	Army
J. R. Reeder, Credit Dept.....	Army
E. J. O'Brien, Sales.....	Army
G. T. Pelfer, Sales.....	Army
Walter Higgins, Sales.....	Navy
S. J. MacMullan, Prod. Eng.....	Navy

The entire facilities are devoted to war production, about which publicity is restricted, and low pressure heating boilers for Army, Navy, Defense Industrial and Housing installations. All of their present business consists of war orders.

Field sales engineers have been called in to plant assignments to assume duties of those now in service.

A constant effort is being made to keep employees' war bond purchases up to 100 per cent.

Skuttle Mfg. Co., Detroit, has had a total of 17 men enter the Army, Navy and Marine Corps, drafted or enlisted in the armed forces. The company is working on quite a number of sub-contracts, on aircraft and glider parts. They are also developing Saran plastic products in connection with the war effort.

Present business consists of about 90 per cent war orders and within the next month the company expects to be operating 100 per cent on war work.

New equipment has been added in connection with war effort.

Employees are purchasing war bonds to the extent of 10 per cent of their wages. Several of their men have seen action.

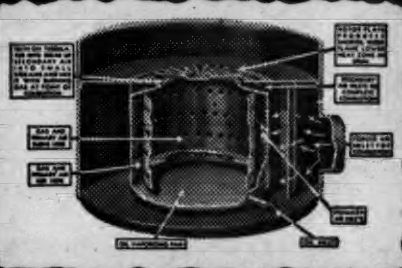
Famous Patented *Monogram* Vaporizing Burner Provides Highest Known Operating Efficiency with Oil

Full Forced Winter Air Conditioners

Utility Room Units

Booster Gravity Units

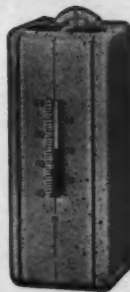
Automatic Water Heaters



The QUINCY STOVE MFG. COMPANY, Quincy, Illinois

ACCURATE

DEPENDABLE



MASTER HEAT REGULATOR

TYPE A-23 positive snap action regulator operates on a differential of only 1/2 degree.

WHITE MFG. CO., 2368 University Ave., St. Paul, Minn.



KOOLESTACK FURNACES FOR STOKERS

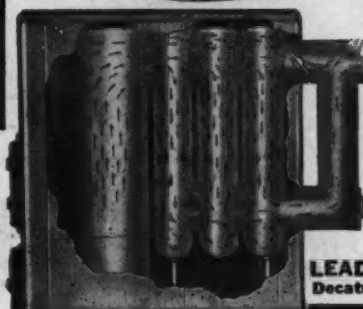
OIL or HANDFIRED

50,000 to 200,000 BTU's

Patented Damper Uses All the Heat in the Added Heating Surface

THAT IS SOMETHING TO SELL

LEADER IRON WORKS, Inc. Decatur Illinois



CHICAGO STEEL BRAKE



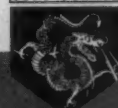
BEST BY FORTY-TWO YEARS TEST

DREIS & KRUMP MFG. CO. 7404 LOOMIS BLVD. CHICAGO

ECON-O-COL the "Stronghearted" STOKER

ECON-O-COL Automatic COAL BURNER

ECON-O-COL STOKER DIVISION COTTA TRANSMISSION CORP. ROCKFORD ILLINOIS



THE SHIELD OF QUALITY



NOW—Use a Mallet that Hits Harder, Wears Longer

The DENSEWOOD

Resilient, non-splitting, made of "Condensed" wood, **THREE TIMES STRONGER** than ordinary wood, the DENSEWOOD Mallet will take harder work—**LONGER**—help you to faster sheet metal work at lower costs. Tough as metal, yet non-static, and cannot mar even polished surfaces. Made with "Lock-Wedge" handles that never come loose. Sizes and types available for all types of work.

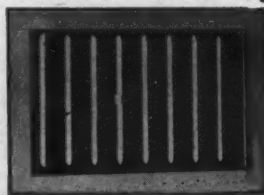
Prove the DENSEWOOD on YOUR Job! Write for details and prices.

DENSEWOOD CORPORATION
ELKHORN, WISCONSIN

"NON-METALLIC" REGISTERS

FOR DEFENSE PROJECTS

Approved by Government Authorities for air-conditioning installations in Hospitals, Industrial Plants, Fortifications, etc., under Army, Navy or Maritime rulings. Field-tested **STANDFORATED** Register and Grille designs of durable, tempered Masonite are fabricated in standard sizes or to your specifications. Write for complete information.



DESIGN NM-SLD—"Non-Metallie" Sliding Damper Foundation Vent.



FOR PRODUCTION SPEED-UP—
Specify Precision Processed **STANDFORATED** Perforations. Industrial Screens, Filters, Guards, etc., made to specifications for vital industries. Handy catalog sent on request.

STANDARD

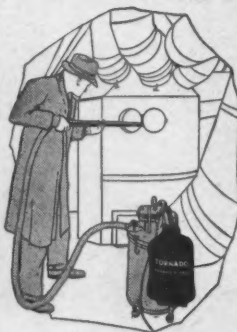
3137 W. 49th PLACE

STAMPING & PERFORATING CO.
CHICAGO, ILLINOIS

TORNADO FURNACE CLEANERS

Are Still in Demand but Are Not Available

UNTIL AFTER THE WAR



The manufacture of **TORNADO** Furnace and Boiler Cleaners was, as you doubtless know, discontinued some time ago to make way for "essentials," on which our efforts are now concentrated.

After the war, these Cleaners will resume their rightful place not only for cleaning purposes, but for keeping you in touch with the fuel and stoker needs of your customers.

BREUER ELECTRIC MFG. CO.
5082 Ravenswood Ave., Chicago, Ill.

Sturtevant MILL EXHAUSTER

LARGE, STREAMLINED INLET MEANS MINIMUM LOSSES DUE TO ENTRANCE FRICTION OR EDDIES

**FOR HIGH EFFICIENCY
LOW POWER COSTS**

B. F. STURTEVANT COMPANY
Hyde Park Boston, Mass.
Branches in Principal Cities

"Designed and Built
by the Pioneer"

On Our Industry's Front

(Continued from page 33)

employer engaged in an essential activity may hire for work in such activity any new employee who for the preceding 30 days was not engaged in an essential activity.

904.2. Workers Previously Engaged in Essential Activities for Work in Other Than Essential Activities. No employer shall hire for work in an activity other than an essential activity any new employee who, during the preceding 30-day period, was engaged in an essential activity if the wage or salary rate to be paid by the employer would exceed the rate most recently earned by such employee.

904.3. Workers Previously Engaged in Essential Activities for Work in Other Essential Activities. No employer shall hire (except as provided for in Section 904.4 of this regulation) for work in an essential activity any new employee who, during the preceding 30-day period, was engaged in an essential activity if the salary or wage rate to be paid by the employer would exceed the rate most recently received during such period by the employee.

904.4. Workers Previously Engaged in Essential Activities for Work in Other Essential Activities in Areas or Industries Subject to War Manpower Commission Employment Stabilization Programs. (a) Any employer engaged in an essential activity may hire for work in such activity any new employee who, during the preceding 30-day period, was engaged in an essential activity, without regard to his preceding wage rate or salary scale, providing such hiring is subject to, and permitted under an employment stabilization program approved by the War Manpower Commission.

(b) A statement of availability shall be issued to any worker by his last employer or by the War Manpower Commission as may be provided in such employment stabilization programs and whenever the worker:

- (1) is discharged by his last employer,
- (2) is laid off for an indefinite period or for a period of 7 or more days, or
- (3) can establish that his present employment does not utilize him at his highest skill or that he is not being employed at full time.

No statement of availability shall be issued solely on the ground that an individual's wage or salary rate is substantially less than that prevailing in the locality for the same or substantially similar work.

Any such statement shall contain the worker's name, his social security account number, if any, the name and address of the issuing employer or War Manpower Commission officer and office, the date of issuance, and a statement to the effect that the worker may be hired elsewhere in an essential activity. The inclusion by an employer on such notice of any information other than that required by this regulation shall be deemed to be a violation of this regulation.

904.5. Acceptance of Employment by Workers. No individual shall accept new employment with an employer if the employer is prohibited from hiring him under this regulation.

904.6. Penalties. The hiring by an employer of a new employee, or the acceptance by an individual of new employment, in violation of this regulation is subject to the penal provisions of the Act of October 2, 1942 (Pub. No. 729, 77th Cong.). The Provisions of Sec. 4001.10 of the Regulations of the Economic Stabilization Director, issued October 27, 1942, apply to any wages or salaries paid in violation of this regulation.

904.9. Effective Date. This regulation shall become effective at 12:01 a. m., Sunday, April 18, 1943.

AMERICAN ARTISAN Service Section

NEW Improved PENTCO

Compound Action AVIATION—SHEET
METAL and ELECTRICIAN SNIPS
QUALITY PRECISION TOOLS



Maximum power, minimum effort.

Combination, Right and Left, No. 185-190-195.

Blades made from alloy steel. Hardened and tempered for rough use. Will cut with ease all grades of steel. Side locking feature that will not interfere with cutting blades.

Case hardened bolts.
IMMEDIATE DELIVERY
Write for Circular

PENN TOOL CO.

2415 N. Howard St., Philadelphia, Pa.

Alphil Spot Welders

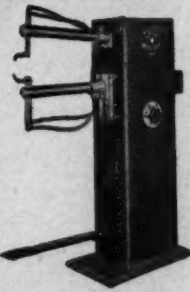
More Production—Lower Cost

used in leading Air-
craft Industries and
many other Govern-
ment plants.

Welders built for
both foot and air
operation. Rocker
Arm, Press Type, Low-
er Adjustable Arms,
Straight Up and
Down, also Swivel
Type.

Problems? Consult Us
For literature and
prices write to Dep't
A2.

Alphil Spot Welding Co.
431 W. Broadway, N.Y., N.Y.



Classified

SITUATIONS OPEN

WANTED: Experienced, top-grade sales engi-
neer for prime established territory by leading
furnace manufacturer. Must have good record
and draft exempt. Salary and expenses plus
real Post War opportunity. Reply should in-
clude photograph and complete details. Address
Key No. 567, American Artisan, 6 No. Michi-
gan Ave., Chicago, Ill.

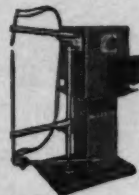
WANTED

WANTED: Good used Blowing Equipment for
blowing rockwool insulation into homes. Ad-
dress Western Furnace, Inc., Tacoma, Wash.

Buy War Bonds



WELDING HEADQUARTERS



Electric welding equipment of every description
to weld from a watch case to a door. Special or
standard SPOT WELDERS from 1/4 to 500 K.V.A.
A.C. Arc Welders from 100 to 400 Amps. We invite
contract Spot Welding in large or small quantities

EISLER ENGINEERING CO.

CHAS. EISLER

701 S. 13th St. (Near Area Ave.) Newark, N. J.

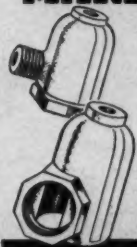
YAGER'S Soldering Salts—Paste

Two standard fluxes for all soft soldering. Safe,
quick, certain. Buy them at your jobbers or write
us if he cannot supply you.

1/2 lb., 1 lb., 5 lb. cans; 2 oz., 6 oz., 12 oz.
ALEX. R. BENSON CO., INC., HUDSON, N. Y.

Better for Every Spraying Purpose

MARLEY SPRAY NOZZLES



"Tops" for Air Washing, Humidi-
fying, Brine Spray Lolls, etc.
Marley nozzles lead all in sales
and in profits to you.

*Finer, more uniform spray.
*Effective operation at low
pressures. *No internal parts
to clog or wear.

Write for Literature Now!
MARLEY CO., INC. Kansas City, Kansas

BLOWERS — FANS — EXHAUSTERS

THOROUGHLY REBUILT, for per-
fect performance. All types; all standard
makes. All sizes including the big ones
Hundreds in stock, meeting all require-
ments. Attractive prices. Fully guaran-
teed. Expert engineering counsel GEN-
ERAL BLOWER CO., Engineers, 403
North Peoria Street, Chicago, Illinois.

QUICK DELIVERY!

APRON BRAKES

POWER: 10'10 ga.; 8'10 ga.; 4' 1/4", 6'12 ga.;
HAND: 10'14, 8'18, 6'18, 4'16 ga.;
BOX & PAN: 7'14; 5'14 ga.;

FOLDERS

42", 30", 20" PEXTO & NIAGARA;

FLOOR LATHES

16"x8 Ft. AMERICAN GEARED HEAD;
20"x8", 18"x8" MONARCH; 14"x8" L&S;
26/46"x20 Ft. SCHUMACHER BOYE;

MISCELLANEOUS ITEMS

NO. 2-48 CINCINNATI 2 SP. VERTICAL
BROACH: With motors, New 1937;
NOS. 2-B & 3 MANVILLE THREAD
ROLLERS, 1/4" capacity;
1/2" & 3/4" SHUSTER WIRE STRAIGHTEN-
ERS, 24 Ft. & 30 Ft. Cutoffs; 7/16" Wells;
NO. 22 LOCKFORMER 23 ga.;

MILLS

NO. 2 1/2" B K&T & No. 2 B&S Verticals;
NO. 2 BROWN & SHARPE UNIVERSAL;
NO. 2 CINCINNATI PLAIN;
2" P&W DUPLEX SPLINE MILL

"SEND FOR CATALOG NO. 430."

INTERSTATE

MACHINERY CO., INC. — YARDS 5800
1433 W. PERSHING RD., CHICAGO, ILL.



THE HINMAN BENDERS

Angle & U, Eye and Pipe

Write for catalog.

manufactured by

L. R. EVANS MACHINE COMPANY
SANDWICH, ILLINOIS

CRACK DOWN ON Spatter COSTS

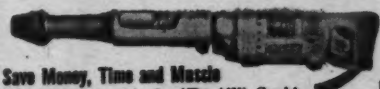
USE SPATTER-NOX

Reduces weld spatter 50-75%; cuts cleaning
time 50%; increases welding speed 30-50%.
Inhibits rust and is a good foundation for
paint. Simply brush or spray on. Covers
450-700 square feet per gallon.

AND SPATTER-OFF

A companion water-soluble product. Used
where welds are to be pickled for galvaniz-
ing, sherardizing or plating. Spatter-Off is
non-fuming. Covers 500 square feet per
gallon.

Write for Latest Descriptive Bulletin
UNIVERSAL POWER CORPORATION
4298 Euclid Avenue Cleveland, Ohio



Save Money, Time and Muscle

Drill Concrete with the "Do-All" Combi-
nation Electric Hammer and Drill. Set expansion
bolts 10 to 30 times faster than with hand tools.
Drills concrete, brick, stone, metal, wood. Easy to
maintain. Weighs 15 lbs. Drills to 1 1/2" in con-
crete. 2400 blows per min. Bulletin 400. Phone
Austin 9956.

WODACK ELECTRIC TOOL CORPORATION
4844 W. Huron St., Chicago, Ill.

SERVICE SECTION: Rates for display space similar to above in Service Section are \$5.00 per inch per in-
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for each word including heading and address. Count seven words for keyed address. Minimum \$1.00 for each in-
sertion. Cash must accompany order.

Index to ADVERTISERS

Accurate Mfg. Works..... *	Gehl Bros. Mfg. Co..... *	Peck, Stow & Wilcox Co., The..... 75
Acme Electric Welder Co..... 90	General Blower Co..... 97	Peerless Electric Co., The..... *
Adams Co., The..... 75	General Controls..... 89	Peerless Foundry Co..... 92
Aerofin Corp..... *	General Electric Co..... 6	Penn Boiler & Burner Mfg. Corp..... 15
Air Control Products, Inc..... 8	Gerett Corp., M. A..... *	Penn Electric Switch Co..... 19
Air-Maze Corp..... *	Gillen Co., J. L..... 94	Penn Tool Co..... 97
Airtherm Mfg. Co..... 73	Grant Wilson, Inc..... 12	Perfex Corp..... *
Allen Co., Inc., L. B..... *		
Allen Corp..... *	Harrington & King Perforating Co.... 84	Quincy Stove Mfg. Co..... 95
Alphil Spot Welding Co..... 97	Hart & Cooley Mfg. Co..... 83	
American Air Filter Co., Inc..... 10	Heil Co..... *	Randall Graphite Products Corp..... 13
American Blower Corp..... *	Henry Furnace & Foundry Co., The.. 93	Register & Grille Mfg. Co..... *
American Brass Co..... 22	Hussey & Co., C. G..... 9	Reiner & Campbell Co., Inc..... *
American Radiator & Standard Sanitary Corp..... *		Republic Steel Corp..... *
American Rolling Mill Co., The..... 63	Ilg Electric Ventilating Co..... *	Research Products Corp.....
American Smelting and Refining Co... 7	Illinois Testing Laboratories, Inc..... 92Outside Back Cover
Armstrong Company, The..... *	Independent Register Co., The..... *	Rock Island Register Co..... 94
Auer Register Co..... 90	Interstate Machinery Co..... 97	Round Oak Co..... *
Automatic Humidifier Co..... 90		Rybolt Heater Co..... 67
Automatic Products Co..... 72		Ryerson & Son, Inc., Joseph T..... 3
	Jackson & Church Co..... 74	
Barber Gas Burner Co., The..... 90	Janette Mfg. Co..... 85	Sall Mountain Co..... 5
Bard Mfg. Co..... *	Johnson Co., S. T..... 78	Schwitzer-Cummins Co..... 82
Bayley Blower Co..... 92		Sheetlock Co..... 89
Benson Co., Inc., Alex R..... 97	Kidder Mfg. Co., Inc., J. F..... 90	Skilsaw, Inc..... 80
Berger Bros. Co..... 90		Southwest Hotels..... *
Bethlehem Steel Co..... 14	Lafayette Hotel..... *	Standard Stamping & Perforating Co.. 96
Beverly Shear Co..... 92	Lamneck Products, Inc..... *	Stanley Electric Tool Div., The
Black & Decker Mfg. Co..... 92	Leader Iron Works, Inc..... 95	Stanley Works..... *
Blockson & Co..... 90	Lewis Laboratories, Inc., Paul..... 76	Sturtevant Co., B. F..... 96
Brauer Supply Co., A. G..... 91	Libert Machine Co..... 87	Superior Sheet Steel Co..... 17
Bremil Mfg. Co..... 93	Lincoln Electric Co..... 77	Swartwout Co..... 86
Breuer Electric Mfg. Co..... 96	Lockformer Co..... 82	Synchromatic Air Conditioning Corp.. 94
Burt Mfg. Co..... *		
	Marley Co., The..... 97	Torrington Mfg. Co..... *
Carnegie-Illinois Steel Corp..... 50	Marshalltown Mfg. Co..... 89	Tuttle & Bailey, Inc..... *
Century Electric Co.... Inside Front Cover	May-Fiebeger Co..... 85	
Cheney Metal Products Co..... 81	May Oil Burner Co..... *	U. S. Air Conditioning Corp..... *
Clarage Fan Co..... 88	Mercoird Corp., The..... 94	Unique Manufacturing Co., Inc..... *
Conco Corp..... 94	Meyer & Bro. Co., F..... *	United States Gypsum Co..... *
Condensation Engineering Corp..... 87	Meyer Furnace Co..... *	U. S. Register Co..... 80
Connors Engineering Corp., W. B..... 87	Milcor Steel Co..... *	U. S. Steel Corp..... 50
Cotta Transmission Corp..... 95	Minneapolis-Honeywell Regulator Co.	U. S. Steel Supply Co..... 50
Crescent Tool Co..... 11Inside Back Cover	Universal Power Corp..... 97
	Mitchell & Smith, Inc..... *	
Dewitt Hotels..... 91	Monmouth Products Co..... *	Wagner Electric Corp..... 72
Densewood Corporation..... 96	Morrison Products, Inc..... 20	Waterloo Register Co..... *
Des Moines Stove Repair Co..... 93	Mt. Vernon Furnace & Mfg. Co..... 90	Waterman-Waterbury Co., The..... *
Detroit Lubricator Co..... 36	Mueller Furnace Co., L. J..... *	Westinghouse Electric & Mfg. Co..... *
Dreis & Krump Mfg. Co..... 95		White Mfg. Co..... 95
	Niagara Machine & Tool Works..... 78	White-Rodgers Electric Co..... 71
Eisler Engineering Co..... 97	Norge Heating & Conditioning Div.,	Wise Furnace Co..... *
Elgo-Shutter & Mfg. Co..... 93	Borg-Warner Corp..... *	Whitney Mfg. Co., W. A..... 88
Evans Machine Company, L. R..... 97	Northwestern Stove Repair Co..... *	Whitney Metal Tool Co..... 84
Excel Heating & Air Conditioning Co.. 88		Williams Oil-O-Matic Heating Corp.. *
Expert Die & Stamping Co..... 86	Olsen Mfg. Co., C. A..... 16	Williamson Heater Co..... *
	Osborn Co., J. M. & L. A..... 18	Wilson, Inc., Grant..... 12
Farrelloy Company, Inc..... *	Owens-Corning Fiberglas Co..... 69	Wiss & Sons Co., J..... 92
Field Control Division..... 77		Wodack Electric Tool Corp..... 97
Fireline Stove & Furnace Lining Co... 79	Pacific Airmax Corp..... *	Wood Industries, Inc., Gar..... *
Fitzgibbons Boiler Co., Inc..... 21	Parker-Kalon Corp..... 92	
Forest City Foundries Co..... *	Patten Co., J. V..... *	Zink Co., John..... *
Frederick Iron & Steel Co..... *	Payne Furnace & Supply Co..... 92	

Firms represented in this issue are identified by the folio of the page on which their advertising appears. Advertising which appears in other issues is marked with an asterisk.



MH Electronics /

IN EVERY HOME.

M-H Electrons are coming to control the heating of homes—to dispense carefree indoor comfort, regulate heating effortlessly, to air condition rooms. Now M-H Electrons are at war, performing miracles in planes, tanks and ships for our armed forces. These

same miracles, or modifications of them, will be available to home owners everywhere after peace comes. Minneapolis-Honeywell Regulator Company, 2726 Fourth Ave. S., Minneapolis, Minn. In Canada: Toronto, Ontario. In Europe: London, England; Stockholm, Sweden.

* Listen "JOHN FREEDOM"
Blue Network Coast to Coast every
Wednesday, 9:00 to 9:30 P.M. Eastern
War Time; or see your newspaper.
"The Most Dramatic Show on the Air"

MINNEAPOLIS-HONEYWELL

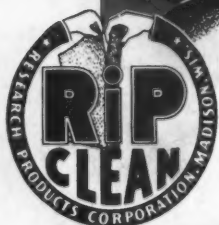
CONTROL *Systems*



You gain 4 ways featuring

RIP-CLEAN*

RESEARCH AIR FILTERS



**91% DUST, 99% POLYMER
REMOVAL EFFICIENCY**

By standard A. S. H. V. tests. 30,000 tiny baffles per square foot provides 25 square feet of dust catching area every square foot of filter face.

*Exclusive on
Research Air Filters



Boosts Service Call Profits

Rip-Cleaning makes it possible for you to quickly and easily clean away lint and heavy dust, boosting your profits on service calls. Rip-Cleaning also makes the consumer more filter conscious so that he will replace filters each season as they are needed.



Builds Customer Satisfaction

Rip-Cleaning builds customer satisfaction, keeps air-flow easy, saves fuel and operating costs. Low air resistance eliminates strain on blower units and helps keep present equipment operating. Research Air Filter's efficient dust removal also saves housecleaning work.



100% Non-Critical Materials

Research 100 Series Air Filters are made 100% non-critical materials. They are always available, assuring you of good deliveries. This means more sales for you and freedom from worry about priorities and scarcity affecting so many other items today.



Has Greater Salability

Research Air Filters are a quality item and look good. This appeal breaks down sales resistance, making them easy to sell. Used by all manufacturers of heating, ventilating and air conditioning equipment. Research Air Filters come in sizes to fit standard forced air units.

Ready Now . . A Complete Dealer Promotional Kit . . FREE!

Complete sales promotional kit including direct mail, newspaper ads and other dealer helps furnished upon request.

Dept. A5 RESEARCH PRODUCTS CORP., MADISON, WIS., U. S. A.